

11073

DR. J. Y. CRAWFORD



PROSTHODONTIA

The Application of the Casting Process to Crown and Bridgework.

By HART J. GOSLEE, B.S., D.D.S., Chicago, Ill.

Larger Cases.

Passing from the smaller class of cases to those involving a greater area of contact of the removable piece with the contiguous soft tissues, such as is demanded by the replacement of a greater number of missing teeth, and which increases, of course, in proportion thereto, a not uncommon class, among others, is one which is always more or less difficult, and which involves those conditions where teeth are required upon one side of the arch only, and where the absence of any posterior teeth on that side would ordinarily admit of anchorage of but one end of the fixture, which is usually so inadequate as to be impracticable and invariably unsuccessful. Whether it be in either the upper or lower jaw, the difficulties in these cases may frequently be overcome by extending the fixture over or around to the opposite side of the arch, and then obtaining some form of anchorage upon that side also, thus imparting stability in the fixation of the entire structure.

A practical illustration of this class of cases, as applied to the upper arch, wherein the greatest difficulties are usually encountered, and in which the base, forming a saddle to support the missing teeth and extending transversely across the palate, together with a Roach attachment in an inlay on each side of the arch, and which was cast of clasp metal in

* Copyright, 1910, by Hart J. Goslee.

one piece, is shown as the case originally presented in Fig. 494, and after the completion of the fixture in Fig. 495.

While a proper arrangement of the channels leading from the sprue-wire to various parts of the saddle, as previously indicated, together with an observation of the other requirements, will usually insure a successful casting, if any great difficulty is anticipated or encountered, such cases may be made in two separate pieces or castings—the saddle, which may be made of thin coin or 22-k. gold in one, and the somewhat heavier and

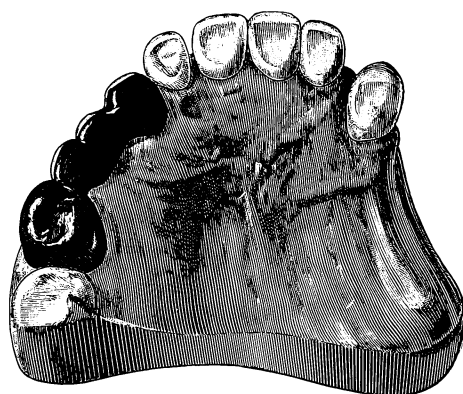


FIG. 494.

thicker piece extending across the palate—which should be cast in clasp-metal—in the other, and the two then subsequently united with solder. To insure strength in such joints, however, it is always well to dovetail one into the other, as will be subsequently described.

The same condition is also often found in lower cases, and successful fixtures demand a similar procedure and may be constructed in like manner. Fig. 496 illustrates a typical case. In the lower arch, however, the saddle should be cast separately, and the extension to the opposite side of the arch made of round clasp-metal or iridio-platinum wire from 12- to 14-gauge, and subsequently soldered to the saddle and clasp at the same time.

Or a casting instead of a wire, providing it is made of a good grade of clasp-metal and sufficiently heavy, may be made all in one piece, and is recommended by some because of being better adapted to the conformation of the arch, and yet less bulky and therefore affording less obstruction to the movements of the tongue.

For such bars and clasps, however, and for all cases where toughness and resiliency are demanded in certain parts of a fixture, *drawn*

PROSTHODONTIA

wire or rolled plate is undoubtedly better, for the reasons already mentioned.

In this particular case the molar crown with the "ball" part of the Roach attachment for the opposite side was made first. The bicuspid crown was then made and a clasp of 26-gauge clasp-metal adapted to it. The bite and impression with these in place in the mouth were then procured, and when the model was obtained and mounted upon the articulator, the saddle was molded in wax to fit the model and the clasp and to

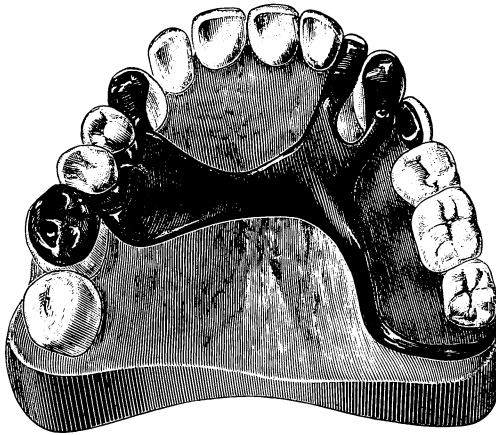


FIG. 495.

accommodate three Davis crowns. After casting the saddle, and attaching it to the anterior bar and clasp with solder, the Davis crowns were then cemented to place, thus avoiding the use of vulcanite, which makes a splendid type of construction where the display of gold is not objectionable.

Extension Bar Bridges.

The extension of a *fixed* arm or projection permanently and securely attached to the supporting teeth at one end by means of crowns or inlays, and resting firmly upon the ridge, is also a useful means of anchoring removable fixtures, and is particularly applicable to the casting process because of the necessity for obtaining a close adaptation of the saddle or removable fixture to the supporting bar. A method devised by and used with considerable success in these cases by Dr. H. E. S. Chayes, of New York, was described at length on page 102, ITEMS OF INTEREST, for February, 1909 (Fig. 497).

The intricacy of the design, however, and the difficulty of manipulating 22-gauge clasp-metal to meet these requirements makes the use

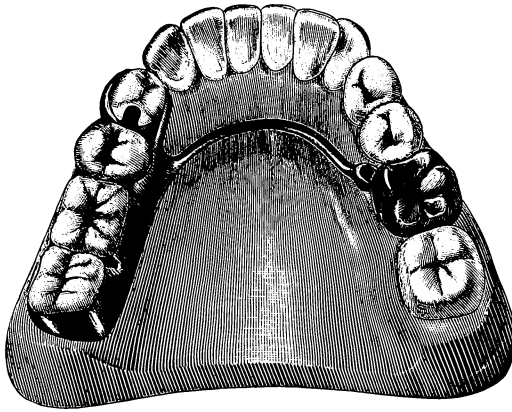
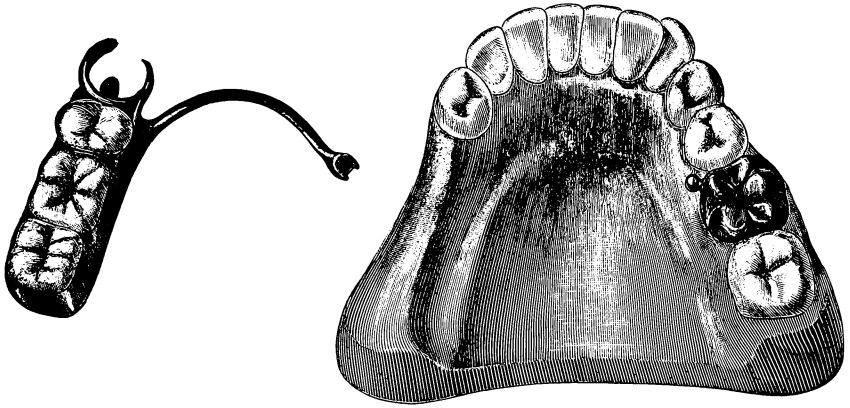


FIG. 496.

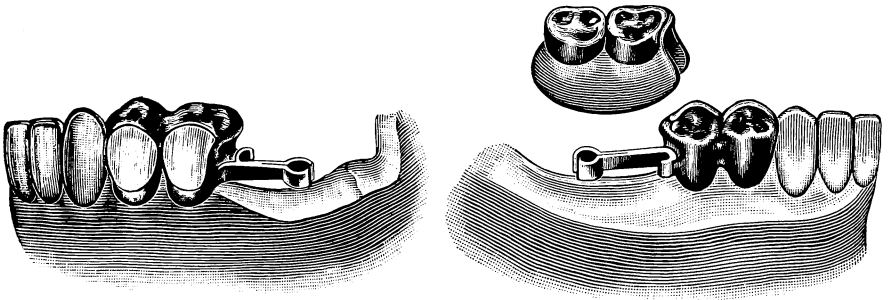


FIG. 497.

PROSTHODONTIA

of such methods more or less impracticable in the hands of the average operator.

More generally applicable and, in some respects, better results are to be more easily obtained by utilizing the tube and *split-post* method in connection with Davis crowns, or any of the other separable dowel porcelain crowns, in the following manner:

The crowns or inlays for the supporting teeth should first be made separately and then united. In this connection the extension bar should not project beyond the supporting teeth farther than a distance equal

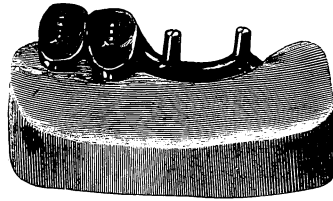


FIG. 498.



FIG. 499.

to their combined width. In the case to be illustrated the two bicuspid were crowned with Davis crowns with cast bases, each having a narrow band as previously mentioned in connection with single-crown work. The bases or caps for these were then soldered together. With these then in place, a "bite" and impression should be taken, the model made of investment material, and the case mounted upon the articulator.

Davis crowns, or other porcelain teeth of similar design, should then be selected and ground to place on the model, and to fit the occlusion, allowing, of course, sufficient room for the bar and saddle. When so ground, short tubes should be made to fit the holes in the porcelain crowns, and these should be drawn from 30- or 32-gauge platinum. If desirable, the holes in the porcelain teeth may be enlarged to any reasonable extent with small stones in the engine. When tubes for each tooth have been made and fitted, the joint should be soldered with pure gold and one end closed.

Two pieces of half-round, or "D" wire, of iridio-platinum or clasp-metal should then be placed with the flat sides together and tacked at

ITEMS OF INTEREST

one end only with solder. This may now be placed in a small pin-vise and turned down with a fine file until the split-post fits the tube snugly.

When closed tube and split-post have been made for each porcelain tooth (and these may be made and supplied by the manufacturer), they should then be trimmed until the tube projects about 1-16 of an inch beyond the hole in the tooth, and the split-post as much longer as the space between tooth and model will permit.

A small roll of wax should then be placed on the model and formed to the outline of the desired extension bar, being careful to fit it closely to the abutting crown or inlay. When trimmed to about the proper outline, each tooth with tube and split-post should then be placed in position on same. The soldered or closed end of the split-post being purposely left longer than the tube, will at once engage itself in the wax and remain

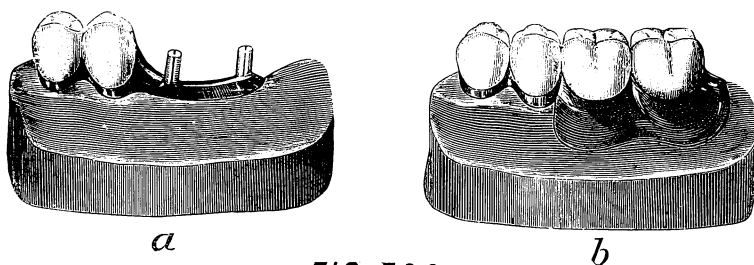


FIG. 500.

there, while porcelain tooth and tubing are being removed, thus admitting of the easy detachment of both, and insuring the proper relation between the split-posts and the wax-bar, for the subsequent accommodation of tubes and teeth. It must be observed, however, that these posts are perpendicular and parallel. When such an adjustment has been obtained, the wax-bar should be removed, the sprue-wire attached and the casting made in clasp-metal. To insure a strong attachment between the ends of the split-posts and the casting, however, the ends projecting into the wax-bar should be roughened and notched, a precaution previously emphasized, and it is also well to use whiting, or to slip a thin piece of mica in between the open ends of the split-posts, in order to preclude their becoming united during the casting process.

When the extension bar has been cast, it should then be finished, fitted to place on the model, *slightly embedded therein*, and then soldered to the supporting crowns.

This, the *fixed* part of the case, when finished, should be placed in position in the mouth and a bite and impression taken (Fig. 498). When mounted again upon the articulator, the porcelain crowns should

PROSTHODONTIA

first be oiled to prevent the wax from sticking to them, the tubes inserted into the holes and the removable saddle then made in wax.

If the saddle is to be made in gold by casting, which is usually preferable because of using an all-porcelain tooth, as soon as the wax-base has been formed, the porcelain teeth should be carefully removed, allowing the free exposed ends of the tubes to remain embedded in the wax; the sprue-wire is then attached and the case invested for casting, in which procedure it must be observed that the tubes are thoroughly filled with investment material.

When the piece has been cast and finished (Fig. 499a), the teeth should then be cemented to place (Fig. 499b), after which the fixed part of the attachment may be mounted permanently (Fig. 500a), and the removable portion placed in position, when the mounting has become secure (Fig. 500b).

The advantages of this type of construction lie in the facility and accuracy with which the fixture may be made and the strength which is to be obtained by the casting process, together with the ease with which tightening of the removable part may be effected at any time, simply by spreading the split-posts.

The *removable* part, or saddle, may be made of vulcanite instead of gold by simply soldering a projecting lip of metal to each tube before waxing up, as a means of insuring attachment of tubes and then waxing up, removing, flasking, packing and vulcanizing in the ordinary manner.

In the construction of bridges of this type it must be remembered that the extension bar acts as a lever, and that the tissues upon which the saddle or removable part of the case rests are more or less yielding; hence, in the excursions of the mandible, the supporting teeth receive stress in both vertical and lateral directions.

Provision for overcoming vertical stress, in the method of Dr. Chayes, is made by grinding or filing off of the top of the extension bar, thus allowing the removable fixture to rest more firmly upon the gum, while the collapsibility of the spring accommodates lateral stress, thereby relieving the supporting teeth to a marked degree.

The same provision against vertical stress is also to be obtained in the tube and split-post method by simply grinding off the top end of the split-posts so that they do not touch the bottom of the tubes. Similar provision against lateral stress, however, is only to be obtained by having the saddle as wide as possible, and well adapted to the tissues upon which it rests, which should always be well absorbed before the introduction of such a type of construction.

A more extensive case, and one that shows the possibilities of casting to a very marked degree, is shown in Fig. 501.

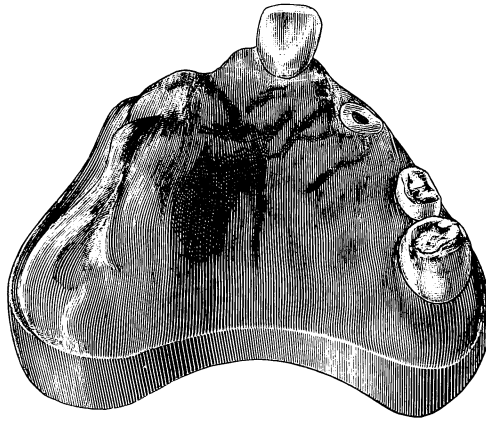


FIG. 501.

In this case, a fixed bridge, carrying a cap with a tube adapted to the root of the central incisor, and the ball of a Roach attachment, was first made and mounted (Fig. 502). A Davis crown, having a cast base and "split-post" dowel, was then made to fit the cap on the central incisor. The model was then obtained and the saddle made in two separate castings, the one covering the ridge being cast in coin gold, and that extending across the palate in clasp-metal, a "dovetail" joint between the two being provided (Fig. 503). These two castings were soldered directly on the model and at the same time the cap for the Davis crown and the tube for the Roach attachment was soldered. All of the teeth, except

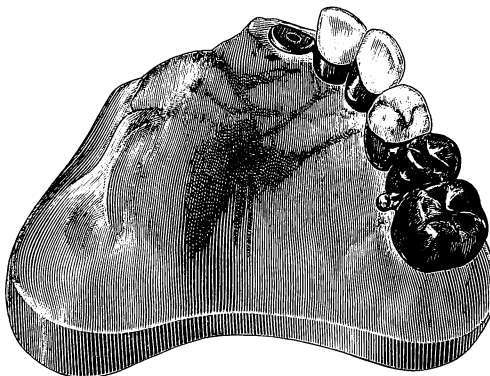


FIG. 502.

PROSTHODONTIA

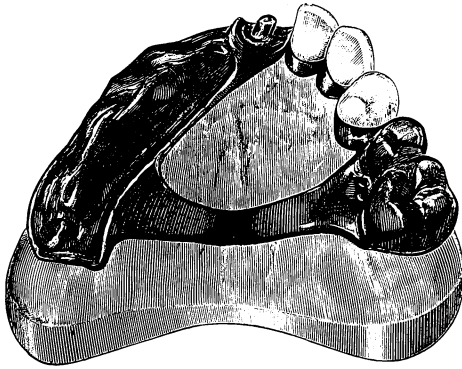


FIG. 503.

the Davis crown, were then attached with vulcanite, and this one tooth finally mounted with cement. The completed case is shown in Fig. 504.

In still more extensive cases, involving the replacement of teeth on both sides of the arch, as illustrated in Fig. 505, the casting may be made in three sections. In the case shown, Roach attachments were used on gold crowns on the molars; the two saddles covering the ridge were first cast separately of five per cent. platinum in pure gold. The section covering the palate was then cast of clasp-metal. When the castings were finished and fitted properly to place on the model to the tubes, and with each other, the teeth were then attached to each base with pure gold, and each side finished separately with Jenkins's prosthetic body and gum

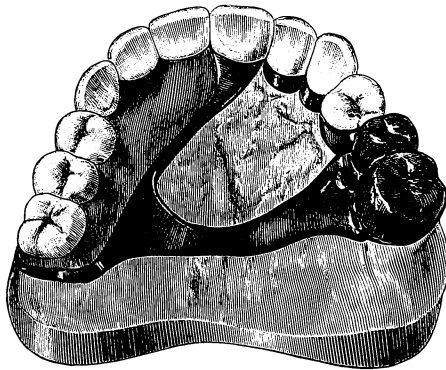


FIG. 504.

ITEMS OF INTEREST

enamel. These were then placed in position on the model, together with the palatal section, and the whole invested. The three sections and the tubes were then united with 20-k. solder. The completed case is shown in Fig. 506.

By this means porcelain was used for cosmetic reasons, and yet the resiliency of the tubes of the Roach attachments, and of the palatal

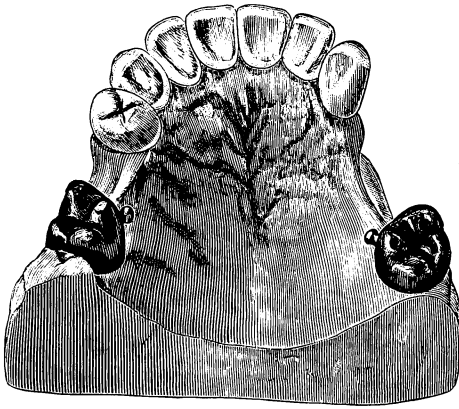


FIG. 505.

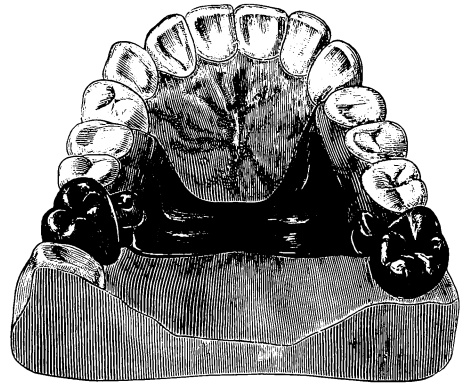


FIG. 506.

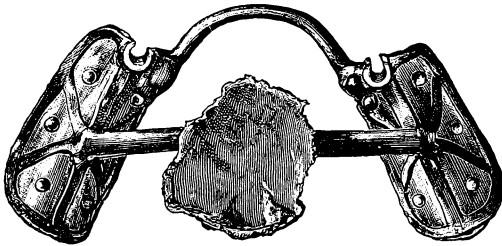


FIG. 507.

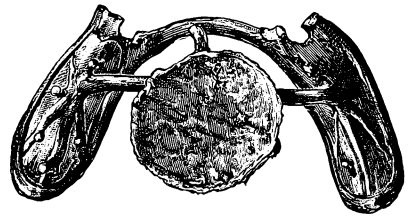


FIG. 508.

section, was in no manner modified by the heat of the furnace in fusing the porcelain. In similar cases, where the teeth are to be attached with vulcanite, the fixture may be made in three sections, as indicated, or cast in one piece, with clasp-metal, as may be preferred.

In lower cases of similar character, the two saddles may be made separately and subsequently united with a 12-gauge bar of clasp-metal,

PROSTHODONTIA

or iridio-platinum, which is regarded as the best procedure, or the entire fixture may be cast in one piece, as shown in Figs. 507 and 508.

While castings of this size, and even more extensive ones, such as are illustrated in Figs. 509 and 510, may often be made in a single piece, difficulty in removing the wax from the model without endangering its

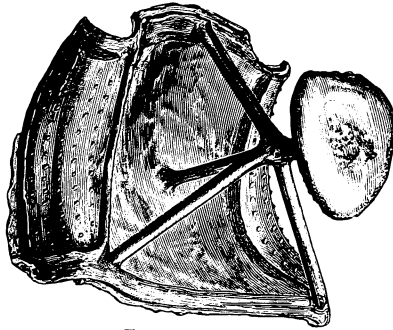


FIG. 509.

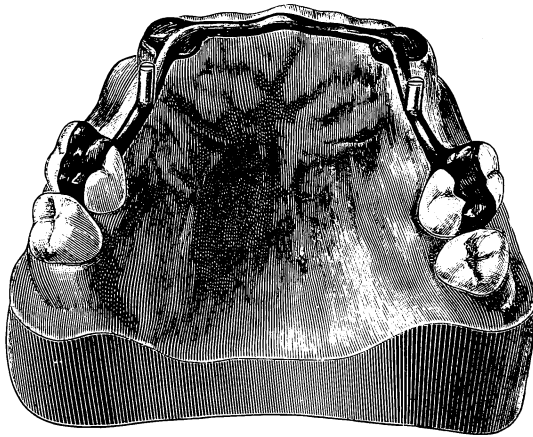


FIG. 510.

shape, or of suitably accommodating it in the flask during the process of investing, may indicate or possibly even demand making it in two, or even three, pieces, and subsequently uniting these with solder, which, as previously mentioned, may be done with facility.

Better results may often be obtained thereby, however, than are

ITEMS OF INTEREST

afforded in swaging, and the time required in the making of models, dies, counter-dies, and in swaging is also saved.

Any difficulty encountered in removing the wax base from the model just prior to investing, on account of undercuts, etc., may be easily overcome by first breaking the model at these points, and then reattaching the broken piece or pieces with wax. When the wax base

Overcoming Simple Difficulties.

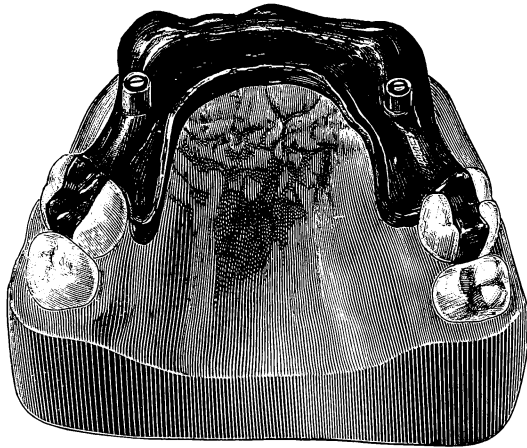


FIG. 511.

has been made and is ready for removal and investment, the broken pieces may first be carefully detached and the wax then removed.

Any possible distortion of the form and shape of the wax during its removal from the model and subsequent investment, no matter how thin it may be, may also be easily overcome by first covering it over with a thin layer of investment material while on the model. When this has crystallized, the protected wax base may then be removed and the investment completed with ease and without danger. In such instances, however, the protecting layer of investment material, which has already crystallized, should be well moistened before the fresh mix is added.

The usefulness and practicability of assembled "abutment pieces" in the construction of removable fixtures increase in proportion as the size of the case increases, and the number of supporting teeth decreases. A typical application of the practicability of this principle

Assembled Abutment Pieces.

PROSTHODONTIA

in extensive cases is illustrated in Fig. 510, where, with but a minimum number of remaining natural teeth to serve as supports, all of the advantages of a "fixed" structure are obtained with a minimum of stress upon these teeth—any one of which possesses the combined strength of all. Add to this the possibilities of restoration, and the sanitary condition resulting, and it is evident that the success of such fixtures, in view of the possibilities of obtaining accuracy of adaptation by the casting

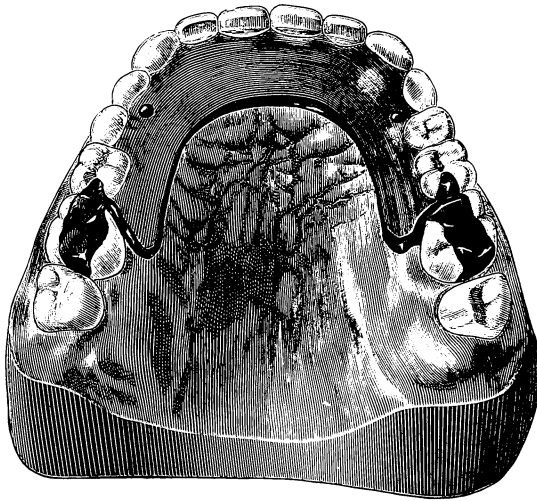


FIG. 512.

process, is unquestionable. In this case inlays were made for the molars on each side and an ordinary cap and dowel for the cuspid roots. These four pieces were then united with a 12-gauge round clasp-metal wire, having a vertical split-post attached on each side in the region of the bicuspid. This fixture was then cemented to place, and the removable one then made with a broad saddle resting upon the ridge and wire, and tubes to engage the split-posts (Fig. 511). The completed case, with removable fixture in position, is shown in Fig. 512.

Typical Cases.

Further evidence of the value of the casting process, as applied to the construction of "fixed" bridgework, of a more or less typical char-

ITEMS OF INTEREST



FIG. 1.

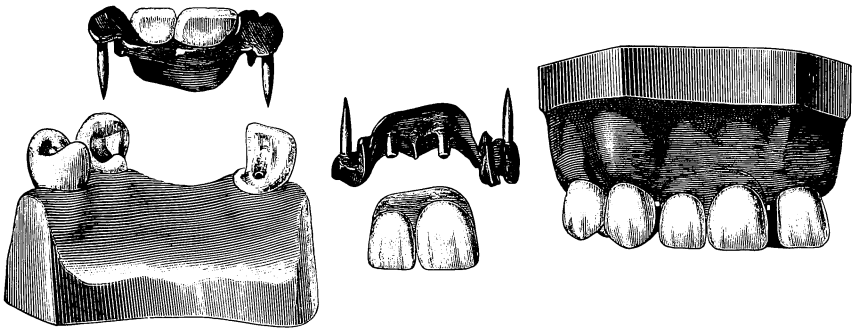


FIG. 2.

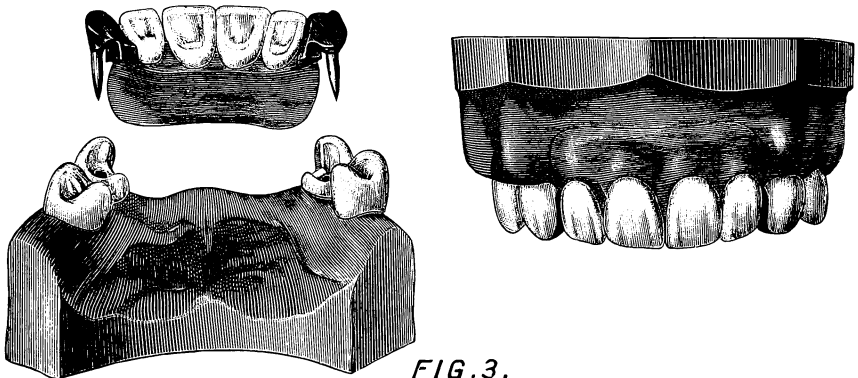


FIG. 3.

PLATE D.

PROSTHODONTIA

acter, and in which inlays are used as attachments, is illustrated in the following cases:

Plate D, Fig. I, shows the application of inlays involving only the lingual surfaces of the central incisor and cuspid, without devitalizing the pulp, and which are used to support a missing lateral incisor.

This particular type of cavity preparation is adapted more generally to those cases where the supporting teeth have pronounced "bell-shape" crowns, where large interproximal spaces admit of keeping their approximal surfaces clean, and where the conservation of the pulp is desired. The use of small pins, however, is regarded as being essential to the secure fixation of this type of anchorage.

Plate D, Fig. II, shows the application of inlays with large posts extending well into the canals of teeth which have been devitalized, and in which the cavity preparation has been made to involve the approximal surfaces of each tooth, thereby bringing the margins of the inlay to immune or self-cleansing areas. This type of cavity preparation is generally regarded as being the best practice, wherever more than one tooth is to be supplied, and devitalization is possible.

It will also be observed that the extent of absorption in this case demanded considerable restoration, and that this was obtained by making a gum block of two separable dowel crowns, and subsequently cementing them to the cast saddle after it had been soldered to the inlays. Such blocks may be easily made by selecting and grinding the crowns, burnishing platinum foil to the model, filling in between the crowns and the foil with high fusing body, and subsequently finishing with gum enamel.

Plate D, Fig. III, illustrates a more extensive case of the same kind, but in which ordinary long-pin, flat-back facings were used in making the gum block. The making of the block, with provision for its subsequent attachment to the supporting inlays, was accomplished by first soldering the facings to a round iridio-platinum wire, 14 gauge, bent to fit around the curvature of the teeth, immediately under the pins, and with each end flattened and adapted to a close contact with the inlays. When so assembled, platinum foil was then burnished to the model, and the desired restoration built up with porcelain body. When the block was completed, it was placed in position on the model and invested, and the projecting, flattened ends of the iridio-platinum wire were then soldered to the inlays with 22-karat solder.

Plate E, Fig. I, illustrates a typical method of supplying a missing sixth-year molar, where the cosmetic requirements call for the use of a full-size tooth, such as is usually demanded in the upper arch, and where a Davis or other separable dowel crown with a cast backing will afford the strongest and most artistic results possible. The same type of con-

ITEMS OF INTEREST

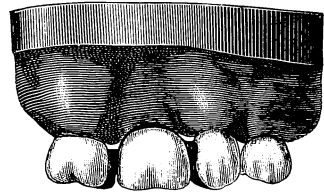
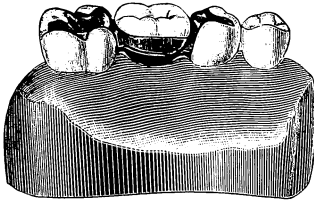
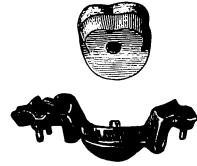
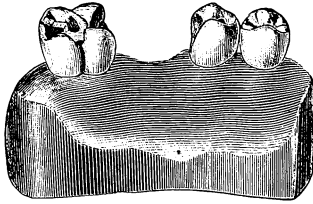


FIG. 4.

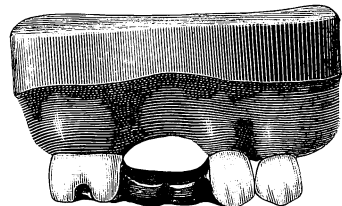
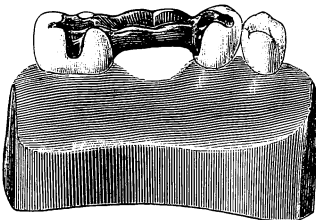
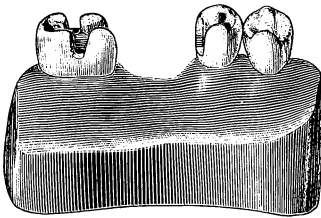


FIG. 5.

PLATE E.

PROSTHODONTIA

struction is also applicable to cases where two or even three teeth are demanded.

Plate E, Fig. II, illustrates the same type of work applied to the lower jaw, where the cosmetic requirements are not so great, and where the restoration of the occlusal surface is all that is demanded.

This type of construction is generally applicable to one or more teeth in the lower arch, wherever the extent of absorption is sufficient to allow ample opportunity for keeping all surfaces clean, and where the display of gold occlusal surfaces is not conspicuous or objectionable.

Removable Attachments in Combination with Porcelain.

In the construction of removable fixtures involving the anterior teeth, and particularly where the extent of absorption demands considerable restoration, any form of attachment which is adapted to the requirements of anchorage, *and which will withstand a higher fusing point than that of pure gold*, may be used, and the casting made of five or ten per cent. platinum in pure gold. When such a casting has been made, suitable teeth may be selected, ground to the proper adjustment and soldered with pure gold, after which the case may be finished with Jenkins's Prosthetic, Brewster's or any of the low-fusing bodies.

Where the type of attachment used will not withstand the casting of this percentage of gold and platinum alloy, the casting may be made to fit closely around them, and their attachment to the finished piece subsequently made by soldering.

In many cases this is an advantage, for the reason that the attachments are not subjected to the heat of the furnace in fusing the porcelain, and, therefore, retain their original strength and resiliency.

It must thus be observed that the scope of casting, as applied to the whole field of dentistry, and particularly to the field of prosthesis, has already revolutionized our methods of practice, and seems to possess never-ending possibilities, and in the light of our present achievements it is apparent that the size of the fixture to be cast and the percentage of successes in casting are but a question of development.

This is evidenced by the fact that even full upper dentures of desired and uniform thinness are already being successfully cast in gold by Drs. Taggart, Van Woert, Solbrig and others.

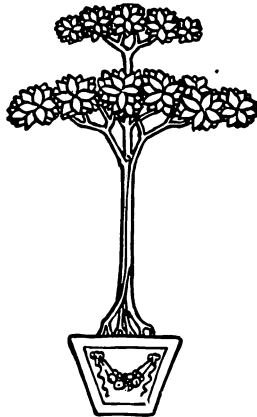
Whether the influence of the casting process upon the molecular arrangement of the metals and alloys so used for full and very large cases, however, will admit of the same accuracy of adaptation that is now obtainable in smaller cases, appears at present to be somewhat doubtful.

ITEMS OF INTEREST

It seems probable and reasonable, however, that this phase of the casting process is also but a question of development.

In this connection, the "artificial stone" investment material suggested by Dr. Weston A. Price, of Cleveland, or something similar, may prove helpful, or may eliminate such doubtful possibilities, but for smaller work its sphere of usefulness seems limited.

All of the splendid achievements which are now within our grasp, however, and those which are to follow, have been made possible by the genius and untiring efforts of Dr. W. H. Taggart, of Chicago, to whom the profession must ever accord credit and should always remain grateful.





The Field of Osteoplastic Operations for the Correction of Deformities of the Jaws.

By W. WAYNE BABCOCK, M.D., Philadelphia.

Read before the American Society of Orthodontists at Cleveland, 1909.

Mr. President and Members of the Society: It is unnecessary to remind you, whose specialty includes this very subject, of the importance of all methods useful in correcting deformities of the jaw. I may, however, emphasize the fact that your art has not merely a cosmetic, esthetic and utilitarian purpose, but that it may subserve also a deeper function—an influence on the very character of the individual treated. Especially is this true when the deformity treated is of high grade. It is marvelous how a timid, shrinking, diffident person, with a narrow, contracted chest and poor physique is transformed, by the correction of mouth-breathing, malocclusion or unsightly deformity, into an individual with initiative, stamina and force of character. Often the change in character is apparent within a few weeks after the operative treatment. Many of you, doubtless, can recall instances in which the timid have been made bold; the stupid, intellectual; the diffident and dependent, self-reliant, by the correction of abnormalities of the mouth or naso-pharynx. Who could conceive of a Napoleon, Wellington, Washington or Grant with a receding chin, with a highly arched palate, with adenoids or a marked degree of malocclusion?

ITEMS OF INTEREST

Orthodontia is but a special field of surgery, as it, no doubt, has occurred to you. You have wonderfully specialized the mechanical measures for correcting the deformities of the jaw. As general surgeons, we can hardly keep pace with you and it is difficult for us to realize how much you can accomplish in a bloodless way. I am not sure but that orthodontia should be considered a part of orthopedic surgery, or the surgery which deals with the corrections of the various bodily deformities. Orthopedic surgery, at times, employs only the "dry" or "bloodless" surgical methods, such, for example, as those exemplified by Dr. Lorenz during his visit to this country. This is the type of treatment used by orthodontists, and it requires weeks, months or years for the attainment of desired results. Then there is the wet or bloody form of orthopedic surgery, which attempts to correct a deformity at once, usually by an open operation. The Lorenz operation, for congenital dislocation of the hip, is only applicable to young children, and then in only a percentage of the cases. For the others, there is left a cutting operation, such as that of Hoffa, which attempts the formation of a new socket. Likewise in correcting clubfeet, knockknees, bowlegs and the like, some may be treated by appliances, others require operative intervention. So it is in orthodontia; there is a residuum of cases requiring the knife. Strangely enough, orthopedic surgeons do not seem to have realized that the surgical principles they are successfully applying to other parts of the body may likewise be applied to the mandible and superior maxillary bone. That we may better realize what may be done with the maxillæ, it is important for us to understand what has been done with the bones of other parts of the body.

The Growth of Bones after Operations.

Bones depend for their growth, size and shape, upon the law of adaptation of form to function. As the individual grows, the use to which the part is put determines its particular shape. The chief growth of bone comes from the periosteum or surrounding membrane. This is true of the mandible, and, to a lesser degree, of the superior maxilla. The regenerative power of the periosteum is remarkable. In the case of the femur, for example, if the shaft be removed, leaving the periosteum behind, and then if by a suitable cast or appliance the thigh is prevented from shortening, the periosteum may proceed to develop a new shaft. At first a flat layer of bone forms, but this gradually becomes rounded, and after a number of months the new shaft may show almost precisely the same shape as that of the original bone, so that the contour of the new femur, as shown by the X-ray, may finally be almost indistinguishable from that of the normal bone. Likewise with the tibia, which has a shaft with flat surfaces, as it re-forms after removal from the

ORTHODONTIA

periosteum, it assumes in just the same way almost the precise form of the bone that was there before, with muscles reattached and with the grooves and eminences reproduced. This illustrates the wonderful reproductive power shown by the periosteum of the long bones of the body. Not many years ago, if the shaft of the tibia or femur were lost, the only thing to be done was to amputate the leg. Now we preserve the periosteum and look forward to the reproduction of a new bone.

Again, when pus formed under the periosteum, the surgeon formerly used the curette, and scraped away a part of the inner or bone-forming layer of the periosteum. The curette should never be used on the periosteum, and, as a rule, the greatest care should be taken in handling and preserving this membrane. If the bone be dead, leave it if you can safely do so, until the periosteum has thickened, acquired some strength and has loosened from the dead bone, so that the dead bone may be removed without injury to the periosteum. Not only has it recently been realized that we can, by preserving the periosteum, pave the way for the renewal of the great bones of the extremities, but it has been known for years that the mandible will often regenerate if exfoliated after necrosis. The only trouble has been the difficulty in holding the soft tissues, so that the new bone would be molded into proper shape. Also when we lose or remove a part of the mandible, it is possible to provide for its replacement or repair by utilizing the adjacent periosteum. If we have a gap in one of the long bones, and the periosteum is insufficient, by separating a flap of the periosteum from an adjacent portion of bone and by swinging the flap across the gap, one may provide for the repair of the defect. The connecting periosteal strip or bridge usually remaining after a fracture is especially valuable in favoring union of the broken bone. We may apply this principle of the periosteal bridge in correcting defects in the mandible.

If we divide the mandible, for example, and leave a marked gap between the divided ends of the bone, if a periosteal bridge be present, the gap will gradually be filled in with new bone, and a permanent alteration in the shape of the mandible may be secured with, perhaps, little loss in the strength of the bone.

With this brief reference to the regeneration of bone, what aid may the surgeon be to the orthodontist? In the first place, surgery, as a rule, is not to be resorted to for the correction of minor defects, nor even for marked abnormalities that may be corrected by the known orthodontic procedures. I take it, however, that the jaw that is deformed belongs to the patient, and that the patient has the option of deciding what he shall have done to that jaw. The final decision must rest with

The Sphere of the Surgeon in Orthodontia.

ITEMS OF INTEREST

the patient in many of the severe cases. The patient is to be advised as to the probabilities and dangers, and of the best course of treatment. If he has a deformity beyond the range of any orthodontic procedure, and he decides to elect surgical methods, after the risks have been explained, he should have the choice of doing so. If a patient have a very high grade of deformity, which will, perhaps, take a year and a half or two years for its correction, and if there be another method which will in a few weeks produce the result more surely, although at a greater risk, he should have the privilege of selecting that method. Again, the patient may not be able to afford a prolonged treatment by appliances, especially if the final outlook is very uncertain. If you can do without an operation, the patient will usually elect the orthodontic measure. It is to be left, however, to the patient largely, and what he elects we should attempt to carry out.

Hullihen's Operation.

As to the history of what has been done in these operations on the jaw, a brief summary may be permitted. It is, indeed, surprising how few operations have been done. Starting in 1848, Dr. S. P. Hullihen,* of Wheeling, W. Va., did the pioneer operation for an elongated jaw, with prognathism. We should name him with a great deal of pride. He had to do with a patient who had been under the care of some of the best surgeons in New York, only to meet with failure and rather an increase of the deformity. Anesthesia was not generally available, the germ theory and antiseptics were not understood, hemostatic forceps had not been invented and much in the way of surgical technique was yet to be evolved, but this man had the hardihood to go ahead and do a series of very extensive operations upon this girl's jaw and neck which resulted in a remarkable improvement, if not a complete restoration. The case was that of a girl of twenty years, who fifteen years before had been so badly burned over the neck that the jaw was pulled down upon the chest, and there had been produced an elongation of the mandible, a protrusion of the lower incisors and marked eversion of the lower lip.

With a small saw, V-shaped sections were resected from each side of the jaw, the section upon the left side including the bicusps. The V-shaped sections extended two-thirds of the way through the bone, the apices being below (Fig. 1). From the apices the saw was turned horizontally forward, completing the section, and leaving the upper two-thirds of the anterior portion of the mandible attached to the soft tissues of the lip only. With the removal of the two V-shaped sections of bone

* "Elongation of the Jaw and Distortion of the Face and Neck Caused by Burn Successfully Treated."—*American Journal of Dental Science*, 1849, Page 157.

the mobilized portion of jaw could be pushed back into place, securing an occlusion of the incisors (Fig. 2). From an impression taken in soft wax a silver plate was then struck up which, when applied, held the section of the jaw in proper position. Union rapidly occurred and Dr. Hullihen then boldly proceeded to correct the defect in the neck. A large flap of skin from the shoulder and upper arm was transplanted to the

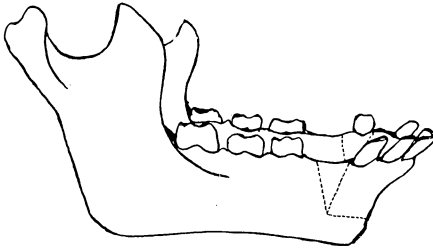


FIG. 1.

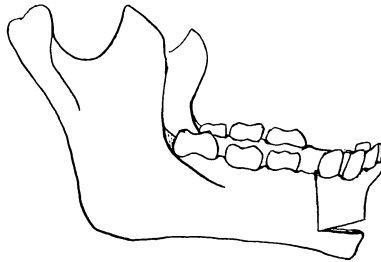


FIG. 2.

Fig. 1. Diagram showing the type of deformity in Hullihen's case, the dotted lines indicating the lines of bone section and the triangular segments of bone to be removed.

Fig. 2. Diagram indicating the correction of the elongation of the jaw in Hullihen's case by the removal of triangular segments of bone. The vitality of the mobilized portion of the bone was maintained through its vascular attachments to the under lip.

neck, enabling the head to be raised, and finally by two further operations the everted and deformed lower lip was made sightly and useful. All of these operations are said to have been successful.

Nearly fifty years elapsed before bilateral resection of the mandible was again suggested. In 1896 Dr. R. Ottolengui,* in discussing the sub-

*Discussion Union Convention, Rochester, New York.—*Dental Cosmos*, 1897, Page 143; Fowler, ITEMS OF INTEREST, January, 1897.

ITEMS OF INTEREST

ject suggested the feasibility of such a procedure, and the following year Dr. James W. Whipple,* of St. Louis, referred to Dr. Edward H. Angle a patient, a young man, with a progressive type of prognathism. After studying this patient, Dr. Angle advised a bilateral resection of the elongated portions of jaw, between the first molar and the second bicuspid on the right side, and the first and second bicuspid on the left side; the sections removed differing from those removed by Hüllihen, inasmuch as the removed segments passed through the entire depth of the body of the jaw. This operation was not performed by Dr. Angle, and the patient finally came under the care of a surgeon, Dr. E. P. Blair, who resected a quadrilateral section from either side of the jaw, brought the teeth into occlusion, wired them in place, and then found great difficulty in holding all the fragments of the jaw in occlusion. However, after nine quite troublesome weeks from suppuration and some necrosis, bony union and a very creditable result were obtained. The publication of this operation led to a few similar operations, which, in some cases, were followed by necrosis, one patient in New Orleans losing the mandible from this cause. Although this operation is performed through incisions from below the jaw, the two compound fractures into the mouth which are produced are so objectionable that a preliminary extraction of teeth, to be followed later by a submucous resection of bone, has been advised. Besides these operations, Von Bergmann, a noted surgeon of Berlin, had corrected the deformity of a receding chin by resecting the processes, and moving the body of the mandible forward where it was held by an artificial dental apparatus.

The possible advantage of a somewhat different type of operation for the correction of prognathism was suggested to me by observations made in a case of a young man who applied for treatment of another condition. The history of the patient is as follows: Samuel K., aged 18; a negative family and previous history, except for recurrent attacks of tonsillitis during the past two winters.

**Condition Found
on Examination.**

The tonsils were large; there was a moderate increase of adenoid tissue in the nasal pharynx; the nasal septum was inclined slightly to the right, and there was a chronic rhinitis of the hypertrophic type. The patient breathed almost exclusively through the mouth; the palate was highly arched, the dental arches were symmetrical and the teeth fairly regular, although short and poorly developed. Only a single molar on the left and two molars on the right side could be imperfectly oc-

*Double Resection of the Inferior Maxilla for Protruding Lower Jaw.—*Dental Cosmos*, 1898, Page 552.

cluded, the minimal separation between the upper and lower central incisors being 7 mm., and the lower centrals being in a plane at least 5 mm. in front of the upper centrals. The chin was rather pointed and prominent, and the patient said that, although the teeth had probably never been in good occlusion, the condition had progressively increased during the past four years. The lips were long and the teeth did not show in ordinary conversation, so that the patient had been repeatedly asked if the teeth had been lost. In smiling and in talking the lips tended to curl in over the teeth, producing an unpleasant expression. In talking the tip of the tongue rested against the lower lip instead of the teeth, so that enunciation had a mumbling character resembling that of an edentulous person. The patient could not bite hard or thin masses of food except by introducing them far into the mouth. Mastication was very imperfect, the food being bolted after a slight attempt at mastication. The lips were kept almost constantly open except during speech. The patient was moderately well developed, but the chest was long and narrow. He was constipated, but did not complain of indigestion.

**Choice of
Measures of Relief.**

The young man had presented himself for *acne vulgaris*, but the ugliness of the facial profile led me to examine the jaw and then to consider the possibility of surgical relief. At once it occurred to me that a section of both rami would be the operation of choice, but on investigation, to my surprise, I found no evidence that such an operation had ever been done previously. The patient was referred to Dr. S. H. Guilford to make sure that relief could not be obtained by any form of dental appliance. Dr. Guilford agreed as to the necessity for surgical intervention and suggested the operation of Angle. This operation seemed to me objectionable for the following reasons:

**Objections to
Angle's Operation.**

1. It would necessitate two compound fractures of the lower jaw.
2. At least one tooth with the adjacent process would have to be removed on each side, and in the removal of these two teeth the exposure of the roots of two adjacent teeth on each side of the mandible would be almost inevitable. Thus two teeth would be sacrificed, and four additional teeth placed in jeopardy.
3. The inferior dental canal with its vessels and nerves would be divided on each side.
4. The arch of the lower jaw would be broken into three portions, would be contracted and would require a special retentive appliance.
5. As the surface of bone would be exposed to the action of the saliva and to infection in the mouth, a greater or lesser degree of necrosis would be almost inevitable.

ITEMS OF INTEREST

In one instance this operation had been followed by loss of the mandible from necrosis.

The division of the inferior dental nerve seemed the least of these objections, as this nerve often reunites after division, and even were the local anesthesia, resulting from the division, permanent, the condition is not a very troublesome one. As contrasted with this operation a section through the ramus (1) would be free from dangers of a compound fracture within the mouth; (2) would not reduce the size of the dental arch or jeopardize any of the teeth; (3) if carried out above the level of the spine of Spix need not involve the inferior dental nerves or vessels; and (4) as the bone could be reached from without the mouth under aseptic precautions, the danger from aspiration would be slight, even should suppuration or necrosis ensue. The septic fluids would be discharged externally and not pass into the mouth to be swallowed or be aspirated in the lungs; (5) the proper occlusion could be produced if necessary by external pressure through a chin-cup, if need were, without the use of any interdental appliance.

As an objection to a section of both rami, my attention was called by Dr. M. H. Cryer to the narrow antero-posterior diameter of the pharynx, and the danger of producing suffocation by carrying the lower jaw and the attached tongue backward. As the support of the hyoid bone would not be changed by the operation, and as it seemed to be quite feasible to reproduce the deformity, should signs of suffocation follow from the procedure, the following operation was undertaken:

Operation. The patient was narcotized by scopolamin-morphin, reinforced by a small amount of ether, December 5, 1908, and an incision carried through the skin and subcutaneous tissue over the posterior border of the ramus of the jaw from the zygoma to a point under and anterior to the angle of the jaw. This incision was not carried through the deeper tissues for fear of injuring branches of the facial nerve and parotid duct. The outer fibers of the masseter muscle were separated and the external surface of the middle of the ramus exposed. With a small chisel a transverse section was then made through the ramus. The operation was repeated on the other side, and the body of the jaw then forced back, and the teeth placed in the best possible occlusion. To facilitate this, a triangular segment of the ramus was removed on one side, a procedure probably unnecessary and undeniable. The opening in the muscle, fascia and external wound was then carefully closed by buried sutures of catgut, certain of the lower teeth wired to the upper and an external plaster bandage applied. No symptoms of suffocation were produced, but on awaking the patient complained that there was insufficient room in his mouth for

his tongue, and that he had difficulty in breathing through his nose. The occlusion of the jaws closed the lips and made them appear redundant.

In the after course of the case it was found that **Post-operative History.** the contraction of the masseter muscles and the depressers of the jaw, by closing the triangular gap in the ramus, tended to separate the jaws anteriorly. The wiring of the

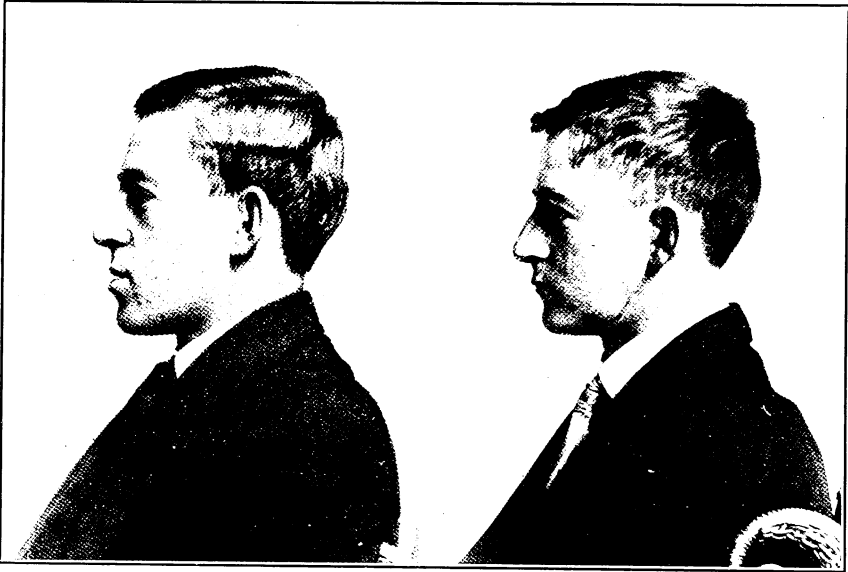


FIG. 3.

FIG. 4

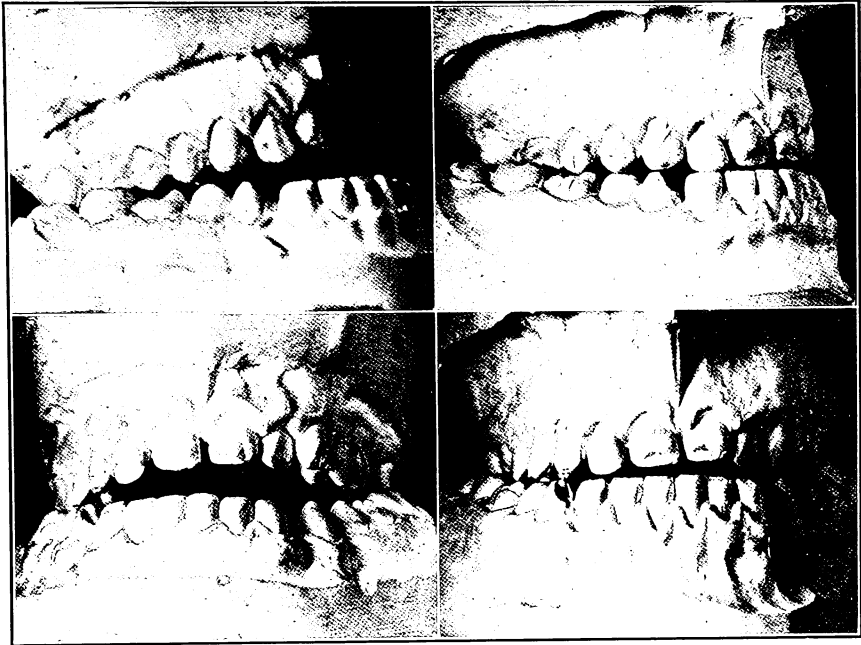
Fig. 3. Case I. Showing the profile in the case of S. K. prior to operation.

Fig. 4. Case I. Showing the profile of S. K. about three months after the operative division of both rami.

teeth was found to be insufficient and was discarded. Through Dr. Guilford, and at the advice of Dr. Cryer who kindly became interested in the case, an interdental splint was constructed, but this, likewise, was not found of much advantage, so that recourse was had to pressure of an ordinary chin-cup connected by elastic bands to a head-piece. By regulating the tension of the bands, it was found possible to bring the teeth into occlusion. This appliance was worn about nine weeks to give sufficient time for the new bony tissue to fill the gaps in the rami, but two weeks or more before the appliance was removed, the patient began

ITEMS OF INTEREST

voluntarily to separate and to use the jaws. There was no tendency to ankylosis, and the lateral and vertical movements of the jaw were well retained. As a result of the operation, the patient's appearance has been greatly improved, the lips have become shorter, the chin less prominent, the mouth is kept constantly closed, the enunciation of words is better,



FIGS. 5, 6, 7 and 8.

Figs. 5 and 6. Case I. Casts showing the malocclusion prior to operation.

Figs. 7 and 8. Case I. Casts showing degree of occlusion obtained through the transverse division of the rami.

nasal respiration has been spontaneously established, food is properly masticated, the tongue is no longer kept between the teeth, the chronic constipation has disappeared, and, possibly as a result of the operation or the cessation of mouth-breathing, there has been no attack of tonsillitis this winter, although the tonsils remain enlarged and the nasal catarrh continues (Figs. 3, 4, 5, 6, 7 and 8).

For those who consider enlarged tonsils, adenoids and nasal obstruction a cause of mouth-breathing and of faulty development of the jaws, we have here some suggestive evidence that the correction of deformi-

ties of the jaw may conversely, at times, be followed by the spontaneous disappearance of the nasal obstruction and by failure of the large tonsils to produce symptoms. By this we, of course, do not mean it is desirable, as a rule, to retain adenoids and enlarged tonsils. This first case illustrated the desirability of having accurate and strongly anchored inter-



FIG. 9.

Fig. 9. Case II. Showing profile to operation.

dental splints made previous to the time of operation, which should enable one to secure, during the operation, occlusion, fixation and immobility, to be maintained until firm bony union had taken place. In the operation, when the teeth are brought in apposition, a certain gap is formed between the bony fragments, but if a bit of periosteum bridge this gap, new bone will form and fill the area.

Inferior Prognathism, Malocclusion, Contracted and Deformed Arches.

Case II. Miss M. H., aged 29 (Fig. 9). The former history is negative, there being no evidence of any prognathic condition or other deformity in the patient's forbears. She was born in Philadelphia and when five years

ITEMS OF INTEREST

old had scarlet fever, followed by meningitis which confined her to bed for one year. There was a discharge from the ears and abscesses formed. This condition was attributed by her physician to her teeth, and he referred her to the dentist for over-lapping of the cuspids. For the purpose of regulating, four teeth were extracted from both the upper and lower jaws. In all, one molar and one bicuspid on each side had been removed from the upper jaw, and two molars on the left, and one bicuspid and two molars on the right side had been extracted from the mandible

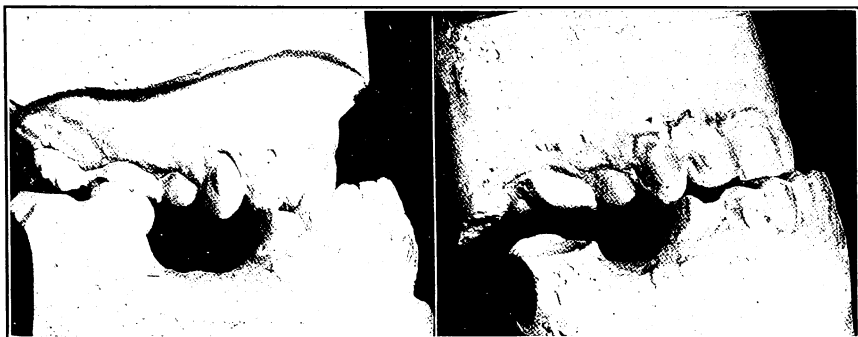


FIG. 10.

FIG. 11.

Fig. 10. Case II. Articulated cast showing malocclusion prior to operation.

Fig. 11. Case II. Articulated cast indicating approximate occlusion after operation. The early correction of the deformity was partially lost through the refusal of the patient to submit to the further application of orthodontic appliances.

(Fig. 10). A growth of new tissue formed in the pharynx which was apparently removed; whether this was hypertrophy of the tonsils or adenoids is not known.

The lower incisors are one centimeter in front of the uppers and two millimeters to the right of the median line. The plane of the occlusal surface of the lower incisors is about three millimeters below that of the uppers. The patient is unable to eat hard or tough food; she can not bite an apple although she can bite off a piece of bread or similar substance. The jaws are easily tired and attempts at mastication are very wearisome. She has suffered for years from debility; faintness under slight provocation; has indigestion most of the time; is very nervous; has a slight enlargement of the tonsils, especially on the left; the nares are very small; there is a marked septal deflection to the right with obstruction, and an enlarged lower turbinate on the left side. She has an extremely high saddle-

shaped or vaulted hard palate. The arch of the jaw is so constricted that the tongue can not be retained within the mouth, but is constantly protruded, and so exposed in the basin-like projecting portion of the mandible. The prognathism was first noticed when the patient was about thirteen years old, after which it rapidly increased.

Operation.

Through Dr. Thomas Weeks, silver interdental splints were constructed with protruding lugs to enable the mandible to be firmly wired to the upper jaw. Using shorter incisions than those employed for the first case, a transverse division of each ramus was made by a chisel. On attempting to occlude the teeth it was found that the mouth was so small that the teeth could not be approximated on account of the size of the tongue, and the projection of the lower molar. Bandages and a chin-cup with head traction, were, therefore, applied, and in the course of a few days we found that the tongue had so adjusted itself within the mouth that after extraction of the two molars the teeth could be brought nearly into occlusion. The interdental splints were then applied, being wired and cemented to the teeth, and by wiring we finally secured occlusion such as is shown by the model (Fig. 11). Unfortunately, the approximation was not perfect, as the splints slipped from the teeth and had to be reapplied. When we finally removed the splints we found that the size of the tongue was such as to produce a constant force tending to reproduce the deformity; and it then became evident that the upper arch should have been widened by orthodontic measures previous to the time of operation, and that more secure interdental splints should have been constructed. Unfortunately, as so often occurs with mouth-breathing, the patient had little stamina, and she did not properly cooperate in the work. It was difficult to persuade her to submit to any operation, or to permit the continuance of any appliance in the mouth and at the present time she will permit no regulation whatsoever to be done. By this case we were taught the value of associating orthodontic measures, in certain cases at least, with the surgical procedure, and the importance of having very strong interdental splints made in sections and firmly anchored to the upper and lower teeth before the operation, was impressed upon us. To secure better occlusion it was found desirable to cut off the cusps of the interdental splints so that the teeth could come in direct contact. I would estimate that the initial tension required in his case to put the teeth in apposition was, perhaps, fifty or seventy-five pounds, a stress much greater than that usually placed upon interdental splints. The advisability of dividing the ligaments of the lower jaw by tenotomy so as to permit a greater separation of the posterior portions of the jaw and greater room for the tongue is to be considered as it would doubtless have

facilitated the after treatment and possibly have enabled us to avoid the extraction of teeth.

Case III.

A third patient, Mr. I. F., aged 22; tailor by occupation. The mother is prognathous, but other members of the family are free from the deformity. The jaws are large and the type of deformity is shown in Figs. 12, 13



FIG. 12.

FIG. 13.

Fig. 12. Case III. Profile showing the character of the prognathism.

Fig. 13. Case III. Anterior view.

and 14. The condition, owing to the large size of the dental arches and the capacious mouth, is well adapted to correction by resection of the ramus. In addition to this, regulation of the teeth is required. This patient has not yet come to operation.

In cases such as the second type, there are certain other points to be considered. We have to consider not only the muscular tension which is produced after dividing the ramus, but we have to consider the ligaments of the jaws. Where you divide the ramus through the center, the two internal ligaments—the speno-mandibular and the stylo-mandibular, if undivided—serve as strong unyielding cords, preventing the lifting of the chin. Where we deal with deformities of the other joints, such as clubfoot, for example, we relieve such tension by a tenotomy or a

division of the ligaments. It seems to me that we must at times adopt a similar procedure here. We must divide these ligaments close to their point of attachment, and then stretch the muscles in order to secure better apposition and less strain.

Many of these deformities are associated with a very obtuse angle, and in lifting the body of the jaw up one must at the same time increase



FIG. 14.

Fig. 14. Case I. Indicating the character of malocclusion prior to operation.

the distance between the articular surface and the angle of the jaw; or, in other words, lengthen the ramus. Should it be necessary to markedly lengthen the ramus, then one has the alternative of applying great force or of dividing the ligaments. Where it is merely necessary to slide the body of the jaw forward or backward a moderate distance, then the tenotomy may be unnecessary. The chief point I should like to make is this: With a bilateral division of the ramus, we can separate and mobilize the body of the jaw so that it may be moved in any direction, from side to side, forward in the case of retreating chin, or backward for prognathism. It may be tilted if desired, and after any one of these procedures, if the body of the jaw be immobilized by splinting, the gaps that have been produced in the ramus will be filled by a deposit of new bone, especially if a periosteal bridge has been left, or if the gap be not too great. Union usually occurs in about four or five weeks. Indeed, the union is so rapid that after divisions of the ramus for ankylosis, that it is difficult to prevent the bony fragments from reunion, unless a portion

ITEMS OF INTEREST

Methods of Operating. As to the methods of dividing the ramus, this will depend largely upon the experience of the individual operator. The operation should not be difficult to one accustomed to operating upon bone. The simplest procedure is probably a subcutaneous osteotomy similar to that

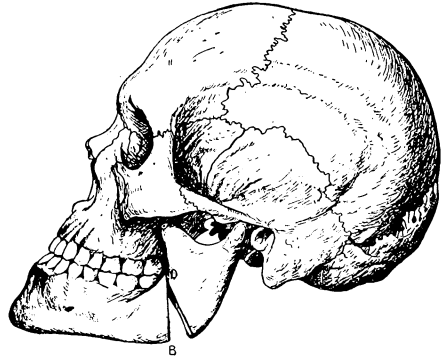


FIG. 16.

Fig. 16. Diagram showing the result of correcting the deformity by division of the ramus along the line D. B. This line of section divides the inferior dental canal, but as it is below the more important muscular and ligamentous attachments, it permits a greater mobility than the higher line of section.

454

a bur or small saw actuated by a surgical engine or the spiral osteotome of Sudeck or Cryer. An ingenious method has been suggested by Dr. V. P. Blair, who makes a vertical incision one-half inch in length posterior to the ramus, through which a heavy needle is passed into the incision behind the ramus, and then brought out through the cheek. By means of the needle a Gigley saw is pulled through the tissues. A small

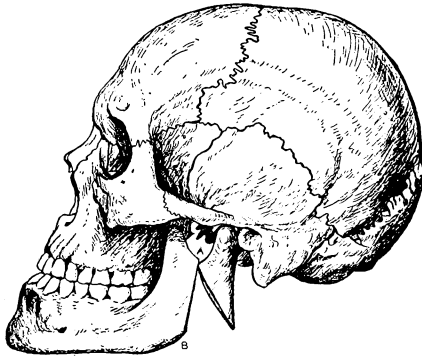


FIG. 17.

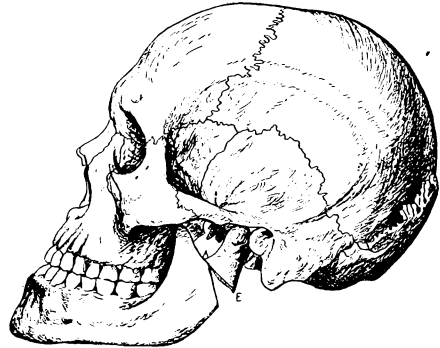


FIG. 18.

Fig. 17. Showing the displacement of the bony fragments by correcting the deformity with the incision A B.

Fig. 18. Correction of the deformity by division of the ramus, at the base of the condyloid process: a line of incision most apt to be followed by the formation of a false joint.

metal tube is slipped over the saw through the puncture in the cheek, so as to prevent laceration of the face, then by simply pulling the saw backward and forward, the ramus is divided. If desired, the ramus can be divided from within the mouth. We have rather frequently exposed the inner surface of the ramus in dividing, or injecting, osmic acid into the inferior dental nerve and have had no serious trouble from necrosis of the bone, a condition always to be feared in the exposure of bone from within the mouth. The Paravicini's incision is used, which is a vertical incision through the mucous membrane to the inner side of, and in front of, the anterior edge of the ramus. Through this incision the tissues may be separated from the inner surface of the ramus, and the bone divided by means of a chisel, bur or other instrument.

It is evident, therefore, that quite a series of corrective operations may be applied to the jaws. In some cases it may be wise to reduce the size of the arch by the method of Hullihen or Angle. Again, we may desire to mobilize and shift the alveolar process, or, retaining the full

ITEMS OF INTEREST

size of the arch, we can mobilize the body of the jaw by incisions through the ramus by one of the methods just described. In making the section through the ramus, in some cases, instead of transverse section, an oblique section, made from the angle of the jaw upward and forward may be of advantage in avoiding ligamentous and muscular attachments and so enable one to secure greater mobility to the body of the jaw. Some of

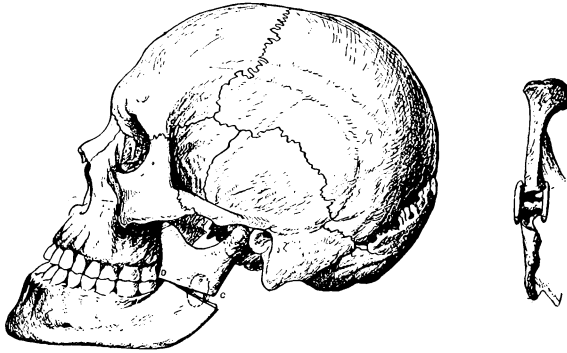


FIG. 19.

Fig. 19. Correction of the deformity by transverse section of the ramus, the smaller figure indicating the application of an ivory or metallic button to fix the fragments. This incision does not necessarily involve a division of the inferior dental angle, and it is specially adapted to those cases in which it is merely necessary to move the body of the jaw backward or forward.

the operations we have alluded to may be applied in a modified way to the upper jaw, but orthodontic treatment has been so successful in correcting deformities of the superior maxilla that I take it, it will rarely be desirable or necessary. It has been demonstrated, however, in surgical operations for the removal of the tumors of the pharynx and nose that one may divide the superior maxillary bones in the median line and so separate them as to secure access to the pharynx. In like manner the upper arch may be broadened. Again, accidents and operations show that the lower portion of the superior maxillæ, including all of the alveolar process, may be separated from the bone and so mobilized as to permit the superior dental arch to be moved or tilted. The bone may be divided on a horizontal plane well above the alveolus, as has been shown by Kocher, for the removal of tumors. The operation, however, is bloody and rather difficult, and is a far more serious operation than nearly any of the operations described for the lower jaw. I think it important that dentists



should realize what operative procedures upon the jaw are at present available. I think it also very important that surgeons should acquire a better knowledge of orthodontia, and that they should try to perfect this special form of surgical practice.

Discussion of Paper by Dr. Babcock.

Dr. Rogers. Mr. President and Fellow Members: It is a pleasure to open the discussion on this valuable paper just given us by Dr. Babcock. I am somewhat at a loss to know why the chairman of the Board of Censors has given me the honor, as I am wholly lacking in experience in this work. We all know that experience is the great teacher, and the man without experience should, perhaps, say as little as possible when called upon to discuss matters before more experienced men. In speaking of experience, I am reminded of a story told of Oliver Wendell Holmes. It seems he once ordered a calf from a farmer to be left in the barnyard. When the calf arrived, Dr. Holmes went out and tried to induce it to go into the barn, but did not succeed. He finally secured the aid of his son, and both worked arduously, but still the calf refused to move. During the procedure a servant girl stood at the kitchen window, and seeing that Dr. Holmes made no headway, finally came out. Without a word she walked quietly up to the calf, and placing her finger in the animal's mouth, walked into the barn with it. Dr. Holmes watched her closely until she disappeared, then, turning to his son, remarked: "Son, we have yet much to learn." That is the way I feel to-day about this operation of Dr. Babcock's. We have much to learn, and those of us with little experience in the work can merely sit by and listen to the experiences of these men who are so expert with the chisel, and who have known enough to "put the finger in the mouth," where we have been doing the same work by pulling and hauling.

The authentic history of this operation is valuable and interesting to us. We are proud of it, because so much of it has been given to us by men in our own profession. Long lapses of time seem to appear between the early strides of science, but after a time as more minds become interested, the strides become more rapid. So I believe with this operation more rapid progress will be made in the next few years. In a few years, perhaps, it will be a quite common operation. But we must have a more definite understanding of our own limitations along these lines. We have, so far, made but a beginning. The results we seek are being but partially attained.

The primary fault, if there is a fault, must rest with the dental pro-

ITEMS OF INTEREST

fession for allowing these cases to develop. As time goes on there will be fewer cases reach men like Dr. Babcock, because, as he says, many of them were mutilated early in life. But there is great hope for those cases that have passed beyond the care of the orthodontist, for they may be helped by their operation.

The reports of cases given by Dr. Babcock were extremely interesting. We are glad to note the wisdom he has used in the selection of his point of attack. Dr. Babcock would have made a good general, because he has avoided, in this operation, the points of danger, and then after the operation has left the field in good shape. He has not destroyed the relation of the parts so much as the former operations have done. Dr. Babcock has experienced some difficulty in holding the jaws together after the operation. It has occurred to me, from an experience in the correction of a severe case of fractured jaw, that there are certain methods which might be used, such as an apparatus attached very firmly to the teeth on both arches. In the particular case alluded to, very heavy platinum wire was applied in such a way that after the operation was completed, it was absolutely impossible for that jaw to move in any way. Not being enough of an artist, I shall not attempt a diagram of the appliance at this time. No doubt Dr. Babcock might be able to use the method of which I speak in his future operations, and thus be enabled to discard the chin-cup and all those things so troublesome to the patient.

One or two points referred to in the matter of the correction of receding jaws, I have as yet to seriously question, possibly because of my lack of experience. It seems to me in our studies of the receding mandible, it is not always, nor even often, that we have a lack of growth so much as malposition, and I believe that those cases can be very much better handled through the orthodontic treatment. The surgeon, as a rule, does not understand our science thoroughly, and as I said in the beginning of my discussion, we must bring ourselves to a closer understanding, learning each the other's limitations; then we can go ahead more definitely.

I want to extend my compliments to Dr. Babcock for his valuable suggestions concerning osteoplastic surgery of the jaws. I have not had a very large experience relative to osteoplastic surgery of the mandible, but have done considerable work on the upper jaw, such as operations for cleft palate, benign tumors, etc. I have a case in mind which was the most pronounced protrusion of the upper maxilla I ever saw. The upper arch was protruding almost two inches beyond the lower. The patient was financially very poor and could not undergo orthodontic treatment, and I doubted whether it would have been possible to correct the de-

ORTHODONTIA

formity by orthodontic methods. The patient was anesthetized and I extracted the four upper incisors, and the prominent portion of the alveolar process was resected; the mucoperiosteal flap was then laid over the part of bone removed and sutured.

After healing, the patient was sent to the family dentist who put in Steele's interchangeable teeth and thereby made a nice looking mouth.

Many of these cases which are beyond the skill of the orthodontist can be improved by surgical methods.

I am very glad to have opportunity of expressing the pleasure I have had in this particular paper, especially because it has been my privilege to see Dr. Babcock's patients. The first one he spoke of I have seen since the operation, and I assure you all he has said, and more, is true of the case. I feel we are very much indebted to him for the progress he has made, and we may almost say it is the initial work in this particular line. The vitality of the lower teeth in these operations is a very marked improvement over the operations exhibited in the past. I think we, as orthodontists, will appreciate as time goes on the need of assistance in our work in these extreme cases, and, of course, Dr. Babcock claims those are the only cases in which he would recommend such extreme measures. With the disadvantages of age and extreme development along those lines, I believe we are powerless to get the results that may be had by such work as he has been doing.

As to the technique of retention, etc., I think Dr. Babcock will find the details of that will work out in the future to his entire satisfaction. Perhaps we can be of some assistance to him from that point of view. The society should be congratulated upon having heard this paper.

I am very glad, indeed, to have heard Dr. Babcock, and regret that Dr. Blair was not here to discuss the paper, for it seems to me that Dr. Babcock and Dr. Blair have come to rather similar conclusions. I know Dr. Blair has had much difficulty in retaining his cases. The pressure is simply tremendous, and the orthodontist is usually surprised to learn that most orthodontia bands are entirely inefficient. I have been present at a number of Dr. Blair's operations, and one remark made by Dr. Babcock impressed me. He said he made an incision along the ear in order to get access to divide the ramus. Dr. Blair has made an incision below the ear, only half an inch long, and then, with one of the curved needles on a long handle, he has started a ligature through on the inner side of the ramus above the entrance of the inferior artery and nerve and between that and the bone proper, and coming out upon the face anterior to the ramus with but a small opening. He then pulls a ligature

ITEMS OF INTEREST

through sufficiently to tie to a Gigley saw. He slips a tube on the saw to protect the cheek from laceration. The subsequent healing will then leave no scar.

I would like to ask Dr. Babcock what difficulty he experienced in taking care of the soft tissues. For example, where he removes a section of the ramus to bring the adjoining parts together, and also how long that great strain on the interdental splint, or whatever appliance is used, is continued. Dr. Rogers spoke of making an appliance that could be attached to the teeth, and doing away with chin-cups, etc. It requires a very slight constant force to draw a tooth or a number of teeth out of their sockets, and if that force were continuous for any extended length of time I think you would have an opening of the jaws with almost any kind of interdental splint, unless you used some auxiliary device to prevent it. I would like to know how long that force is continued.

As Dr. Babcock has done me the honor to mention my name in connection with a suggestion made some years ago in regard to the feasibility of this operation, I would like to give you a very brief account of the operation which gave me this idea. Some time in 1896, Dr. George R. Fowler, a prominent surgeon of Brooklyn, consulted me in regard to an operation which he was about to perform for an epithelioma in the region of the throat. In order to obtain better access, he desired to divide the ramus, and he asked me if I could construct a splint which would guarantee normal occlusion after the operation. As the young woman had a magnificent set of teeth in ideal occlusion, and the splint could be made in advance, I readily agreed to undertake this part of the treatment.

I constructed a rubber splint which separated the two jaws sufficiently to allow for a feeding space, as was customary in those days. The operation was performed, the two parts of the severed ramus reunited by wire, and the splint put in place readily; but twenty-four hours after the operation, when I visited the patient, I noted that the splint held the severed ramus slightly apart, and I realized at once that if this gap should be filled across with bone, it would be impossible, after the operation, for the patient to bring her teeth into proper occlusion. With the consent of the surgeon, therefore, I took new impressions of the two jaws, swedged up very thin continuous caps of pure gold, and, placing these together on an articulator, united them with solder. This splint was used with great satisfaction and with the result that the teeth, after the operation, fell into exactly the same occlusion as before.

In making a splint of this kind, it is advisable to cut out a portion of the splint, so as to disclose the labial surfaces of the anterior teeth. By

this means it is easy to be sure that the bandages hold the jaws firmly into contact with the splint.

I think these cases, where the healthy jaw is intentionally divided, must be treated differently from fractured cases, and that it will prove to be essential, in order to obtain the desired occlusion after an operation, to devise such splinting methods as will maintain the teeth as accurately as possible in the occlusion relations planned. I believe that for this purpose a double splint would prove advantageous, although it may be necessary as an auxiliary to the splint to make use of some method of ligating the jaws together also. By this means the intermaxillary splint will prevent lateral motion, while the ligatures may be relied on to secure the jaws within the splints by exerting vertical stress.

Dr. Waugh. I have had the privilege of assisting in the treatment of some fractures, and it is our custom to make models of the mouth and saw the model of the

fractured jaw and put the parts in apposition, getting the occlusion from the models and then making a rubber splint. Rubber is cleanly if properly handled, and if one feels the need of steady strain, I have added an inclined plane of rubber, and by using the cap and chin-piece and strong rubber bands the jaw can gradually be drawn into place. In two cases I remember telling the patient to try to close the mouth, the teeth went with a snap into position.

The casting process is an excellent method. Make the splint in two or three sections and unite those in the mouth, soldering as necessary thereafter. Casting will come in very nicely, in that it will permit the contact of the cusps in a more exact way than can be obtained by swaging.

If, in making splints, anyone is ever compelled to bring about an opening of the mouth, proper occlusion of the teeth after the splint is removed can not result unless you have used some means by which you have established the relation of the teeth with the joint, and then you may mount it on any articulator you choose, but you must have the exact relation of the occlusal plane to that joint, when opening it and the teeth will afterwards go to place. If you have been accurate in your work, you need not fear those difficulties where you are compelled to have an opening in the anterior region for feeding, or for any other purposes.

Dr. Strom,
Landau, Germany. In listening to this most interesting paper, I was reminded of an operation two years ago in the Royal Hospital in London. The surgeon used a curved knife, two and a half inches in width. He cut the

alveolar process in different sections, using forceps, the beaks of which were padded, hard rubber being used on the labial surface and soft rubber on the lingual. He applied a splint and said that in a fortnight it

ITEMS OF INTEREST

would heal and stay in position. I think Dr. Visick knows more of this case than I do.

Dr. Hedley G. Visick,
London, England.

It is very kind of Dr. Strom to mention my name in reference to this subject, but I can not claim to have had much experience with these cases of surgical correction of malocclusion. I remember one case which came under my notice at Guy's Hospital in London. Patient, a boy aged about twelve years. He came to the Dental Department with the following condition: The upper right cuspid was in lingual occlusion, being hopelessly locked in position by the lower teeth. There was plenty of room between the right upper lateral incisor and first bicuspid for the cuspid to be moved into position, and as it was the only misplaced tooth in either arch, immediate surgical treatment was decided upon. The upper right lateral incisor and first bicuspid were banded, and a plaster impression taken. The two bands were then joined by a wire, which passed lingually to the cuspid when placed in normal occlusion. The patient was then anesthetized with nitrous oxide by the nasal method, and the tissues in the vicinity of the cuspid were thoroughly swabbed with antiseptic lotion. Incisions were then made through the soft tissues and alveolus on either side of the cuspid by means of a hand saw, to the depth of about fifteen millimeters. A pair of stout forceps were used, with a T-piece covered with soft rubber on the outer blade, which was placed high up in the sulcus above the tooth to be moved. The inner straight blade was then forced up into the bone on the palatal side of the cuspid, and strong outward pressure was brought to bear on the tooth and surrounding bone. By this means the tooth and surrounding bone were bodily moved forward into correct position and the splint forced into place. When the patient had recovered from the anesthetic, the splint was removed and then cemented into position. The patient suffered very little inconvenience from the treatment, and only wore the splint for a period of about six weeks, as the cuspid was retained in position by the lower first bicuspid and cuspid. About seven months after the operation the tooth was examined and found to be satisfactory in every way.

In a case of this description surgical treatment seems to be ideal, as the patient is put to so little inconvenience, but one must always bear in mind the risks run in undertaking the surgical treatment of such a case.

Regarding Dr. Waugh's remarks, I should like to say that in cases of fractured mandible, in which a double splint was to be made, I have always used an articulator on which to mount my models before fixing the splints together. In all cases after the removal of the splint I have found the teeth occlude pretty satisfactorily, especially after a day or so, when the jaw has become used to moving once more. I have often

ORTHODONTIA

used such a splint as mentioned by Dr. Rogers, in which a stiff wire is bent up around the teeth, and then wired in position with ligatures passed between all the teeth; but I have only used a splint of this description in those cases where I considered only a single splint necessary. However, in a case where resection of the mandible is proposed, I should think that a wire splint could be made for each jaw before the operation and firmly wired in place; then, after the operation is performed, the teeth could gradually be brought into occlusion before the new bone is formed, by passing ligatures between the upper and lower splints and exerting gradual pressure. In this way the muscles would be gradually stretched, and it would not be necessary to exert that great stress which is necessary when the teeth are brought into occlusion at the time of the operation.

Dr. Weston H. Price,
Cleveland. Mr. President and gentlemen of the American Society of Orthodontists: I feel I am unworthy of taking your time, not being a member of your Society, although I think a great deal of you as individuals. I want to congratulate Dr. Babcock on this operation which he has suggested, and I am sure the work he is doing and that you are doing is going to be of tremendous importance to the coming generation. I want each one of you to feel you are a millionaire in opportunity; that you have a greater opportunity to bless the world than we, who do a general practice, and I say Godspeed to this Society. To my mind it is fitting you should have the cream of all of our profession, because you have the ideal specialty, and I congratulate you in that work.

If I were to discuss the splendid presentation, I would emphasize what someone has already suggested—the making of a cast interdental splint. I may refer to that when I give my clinic this afternoon, showing technique.

Dr. G. F. Woodbury,
Cleveland. I did not come to this meeting expecting to be called on for any remarks. I am just here to learn. However, since the privilege has been given me, I will say that while I do not practice this work as a specialty myself, I keep in close touch with the wonderful things you are doing. And I feel as Dr. Price has just suggested, that the field that you are working in and the things you are accomplishing are very great; and the benefits which will result to the people are very large, indeed.

Dr. Robert Dunn. I would like to ask Dr. Babcock a question relative to the bridging over of the periosteum. Orthodontists are frequently required to correct cases of malocclusion where the operation for cleft palate has already been performed and there has been a failure in getting union in the anterior

ITEMS OF INTEREST

portion of the cleft. In the operation that follows there may be some opening of the cleft. Does Dr. Babcock consider that bridging the gap with a flap of periosteum would result in a restoration of bony union.

Just a little point as to the making of the splints.

Dr. Varney Barnes. I have had some experience in swedging them from thin metal, and then soldering the different parts together. My method was to swedge on zinc dies with lead counter. Take the cast and press the model into molding sand and withdraw it. The withdrawal takes away part of the sand where the undercuts were. Then brush or blow off the particles broken away, and press the model back into place and withdraw it, repeating two or three times, thus destroying the pull of the undercuts. I allowed the splint to pass over the gums, flanging outward, and in setting the appliance I use Ames' oxyphosphate of copper with a large excess, which is allowed to flow down thoroughly between the teeth and on to the gums. No inflammation of the gums ensued, such as you might fear.

As Dr. Babcock is a physician, I would like to avail myself of this opportunity of securing an expression of his opinion on the question of the possibility of a systemic effect on the patient from the use of German silver in these splints. I am using German silver in some mouths, in some, precious metals, and in some, a combination. I use the precious metals for two reasons: Because of its greater durability and greater elasticity after being soldered, and for esthetic reasons; but I have never seen any deleterious systemic effect from German silver. Some have thought there might be such an effect, and the Doctor, as a physician, may probably give us some light on that subject.

Dr. Fisher. I should like to ask if I understood Dr. Barnes that his splints for the superior and the inferior maxilla are united into one piece before cementing.

Dr. Barnes. I do not solder the two splints together; they should be made separately and then wired together from lug to lug.

Dr. Ottolengui. Have you tried wiring the splints together, and seen the result?

Dr. Barnes. Yes, I have.

Dr. Ottolengui. Was it a good result?

Dr. Barnes. It was.

I want to point out the great danger which may result from such practise. Almost always the operation preceding the placing of these splints requires a general anesthetic, and ether is usually selected. Any time

ORTHODONTIA

during the following forty-eight hours severe vomiting may occur, and if the nurse be away from the bedside at this critical moment your patient will choke to death; or, if the nurse has not sufficient skill, or has not been carefully instructed, she may find it impossible to remove the splint even if she be present at the time of vomiting. Dr. Ottolengui has shown you that cementation of the splint is not necessary, so why take this unwarranted risk with the life of your patient?

Dr. Waugh. I have, on occasion, made and set splints for general practitioners in surgery, and they have never had a satisfactory result, simply because they could not handle the splints. I have never found it of advantage to cement the splint. Our splints are made to be removed for cleansing purposes, etc. I know of one or two cases where the splints were handled by general practitioners, and they went against my instructions regarding removal for cleansing, and they were compelled to take the splints out because the tongue became swollen and sore, and the physician feared the life of the patient might be endangered.

Dr. Gasto. Dr. Babcock's paper has been of much interest to me. The work he has done and is doing now deserves very great consideration. It is a phase of surgery that has been neglected.

A few weeks ago I had occasion to witness an unusual operation on the mandible. It was of especial interest in that it demonstrated the great power of nature to heal. The history of the case was as follows: The patient, a man forty-one years of age, was driving home in the country with a team of horses and a heavy wagon. He was intoxicated; the horses became frightened and ran away; the man was thrown from the wagon and was either run over by the wheels of the wagon or kicked in the face by the horses. At any rate, when he was brought into the hospital he was in a very bad condition. He had several broken bones and many cuts and bruises. His lower jaw was fractured in three places: (*a*) through the ramus on the left side, about half way between the condyle and angle; (*b*) through the body of the jaw in the region of the lower left bicuspid; (*c*) and through the body of the jaw in the region of the lower right bicuspid; on this side there was considerable contusion of the soft tissues and bones, and one or two of the teeth had been knocked out. The lower lip was badly contused and part of it had been lost.

When the patient was brought to the hospital, the surgeon on the case found him in such bad condition that after doing everything he thought necessary to save his life, he decided it was not best to do very much work on the face and jaw. He did, however, operate on the fracture of the body of the jaw on the left side. He wired the bone

ITEMS OF INTEREST

together, and it united perfectly; he also closed the gap in the lower lip. A portion of the lip had to be removed, so that when the cicatrix formed the mouth was very much constricted. The fracture of the ramus on the left side and the fracture of the body on the right side were not operated upon at that time.

About six weeks after the first operation I was called into consultation on the case. I found the following condition: The patient had no use of the lower jaw. The mouth was in a most unhygienic state. There was considerable contused tissue around the fracture of the body on the right side and evidences of necrosed bone. The teeth in close proximity were quite loose. At the fracture of the ramus the lower part had been forced back and up beyond the upper part and was held securely by the muscles and the formation of new tissue. There was absolutely no chance to use a dental splint or apparatus of any kind, therefore a radical operation was advised.

The patient was anesthetized with ether by the Crile method, *i. e.*, by passing rubber tubes through the nares to the larynx, the other end of the tubes being attached to the ether bottle.

The fracture of the ramus was operated on first. An incision about three inches long was made under and along the ramus and angle of the jaw. It was with considerable difficulty that the ends of the bones were exposed, a cartilaginous tissue having formed which had to be removed.

The ends of the bones were made fresh by scraping, and then put into adaptation. Holes were drilled through the bone on either side of the fracture and a steel staple was driven in. Silver wires were passed around each segment and the staple to assist in holding it in place. The fracture of the body on the right side was then operated on. The constriction of the mouth, caused by the loss of tissue and cicatrix, made it necessary to make an incision. An incision was made beginning at the angle of the mouth and ending at the lower border of the chin. Considerable necrosed tissue was found that had to be removed. Two teeth also had to be removed. The ends of the bones were scraped until healthy tissue was reached; a hole was drilled through each segment of the bone near the fracture and a good-sized ordinary steel screw put in. A silver wire about 26 gauge was then wrapped around the heads of the screws in a figure of eight style, bringing the ends of the bones into adaptation.

On account of the loss of bone the jaw was drawn over to one side and a considerable deformity produced. There was practically no occlusion of the teeth.

The operation lasted about two hours. The patient was an alcoholic, and got in such bad shape during the operation, I did not think he would

ORTHODONTIA

survive it. He did, however, and the surgeon advised me yesterday that he had been discharged from the hospital several days ago in fairly good physical condition.

I beg to thank the gentlemen for the many valuable suggestions they have made. I realize that this subject is a rather young one and undeveloped, as has been said. We are simply feeling our way along. The men of this Society will contribute a very valuable part to the advances which will be made. I think the surgeon is a sort of handmaid to the orthodontist in this work. It is usually for the orthodontist to say whether the operation shall be done, or whether it is necessary. If the orthodontist advises the patient, that settles the matter at once. Even though the surgeon does the work, he must have the assistance of the trained orthodontist to keep the parts in position, make the splints, etc. Then, afterward, there will usually be some deformity requiring correction. The surgeon can often only hew out the rough part of it; the result may be so good the patient will be entirely satisfied; or often orthodontic work must be done. I neglected to thank the dentists who have helped me: Dr. S. H. Guilford, Dr. Thomas Weeks, Dr. Merrill Weeks, and others. I am indebted to them for suggestions and for aid in the work.

I can heartily agree with what has been said as to the limitations of surgery and of orthodontia.

I was very glad the Gigley saw, as used by Dr. Blair, was mentioned. That is a very ingenious way of using it. In my operations it was my desire to see the ramus. I wished to see how the fragments looked after the reduction, and I wished to use wedges also. Both of the incisions in these cases showed us the ramus.

In regard to the soft tissues, there is no trouble in that respect. If the manipulation has not been too severe, if the soft tissues are not traumatized too much and you do not devitalize the tissues and are clean in your work, you will have no trouble. An aseptic union should be the usual result. We use buried sutures for the skin, so as not to leave suture holes.

As to the use of auxiliary devices to bring the jaws together, or the use of splints, this is very important. It is very different from the problem in the case of fractures. In fracture cases you put the bones together in a position which is normal, and the muscular pull is not a very great factor; slight pressure is sufficient.

In the second case it required nearly all the pressure I could muster against the point of the chin to bring the parts into their proper position; perhaps forty to sixty pounds were used.

ITEMS OF INTEREST

The object of making two splints is to get a firm hold on the teeth and then wire these at a later time and gradually bring the jaws together. You could hardly hold the jaws in apposition while the cement hardened. The principle that I mention of dividing the ligaments should enable one to mobilize the jaws so that this pressure will not be required, and then of course the problem is simpler.

In one case we used a plaster of Paris bandage around the head, and could not get it tight enough to hold the teeth together. It was insufficient. You must have adequate and continuous pressure. If you have your caps fitted and wired around the necks of teeth and cemented also in advance of the operation, then, even although you can not bring the jaws together as you wish, because of the size of the tongue, you can partially bring the jaws together, and later on bring them into occlusion, taking two or three days, and avoiding tremendous immediate pressure and the danger of suffocation. In one case we used elastic bands to keep up continuous pressure, and it required about a week before the patient could keep the tongue back in the mouth. In the second case the cavity of the mouth was very small, but after a few days the tongue accustomed itself to the new conditions, and the teeth could then be put in occlusion.

The first splint pulled off the teeth; it had been cemented on. Even this was insufficient. We found, too, as Dr. Ottolengui has shown, that we were keeping the teeth too far apart, so Dr. Thos. Weeks ground off the cusps so that we could see the positions of the teeth and note how the occlusion was when the caps were put back a second time.

There is no doubt but it is desirable to make the splints in two portions, and it is desirable to put them on before you do the operation. It sometimes requires anesthesia to bring the jaws together after the operation. If bands or wire ligatures are used you can gradually bring the teeth into occlusion without the necessity of anesthesia. It simplifies your after-procedure very much, and sometimes you can at once put the jaws in occlusion. In regard to the anesthetic, if the patient is fairly old, use apomorphia. It is not so useful in young patients. The patient awakens without any knowledge that the operation has taken place. It leaves the mouth dry and there is no vomiting afterward. Ether may be used by the methods described, or by the rectal method. Or, one can use nitrous oxide, with the nasal inhaler.

Dr. Casto.

Would you call that rectal anesthesia, and how long has it been used?

Dr. Babcock.

Ether was first used in 1846 and 1847. Within a year a noted German surgeon had advised giving it by rectum. It rarely was used in that way however, until forty years later, and in the eighties one of the New York

ORTHODONTIA

surgeons started to use it with at first splendid results. Dysentery followed its use, and it again fell in disfavor. Ten years afterward it was revived in Boston. The older surgeons used it without proper methods of ventilation and in too concentrated a form; now it is used with but slight trouble. It is a method of some value in these operations on the face.

In their operations on the jaw I think it criminal for surgeons simply to leave the fragments of the jaw unsupported, and not securing the aid of the dentist or orthodontist to fix the fragments in place. Possibly a tumor is excised and the teeth are left in malocclusion, and the jaw is of no use to the patient whatever. If the fragments were only left in occlusion, later on when the tissues had united there would have been secured a jaw of some value. This was one of the crimes frequently committed in surgical practice in the past.

I do not think that even cement is sufficient in some of these cases. You must have wire ligatures to give proper anchorage for the splints.

Replying to Dr. Walker I would say that the systemic effect of German silver is inconsequential, I think. I believe it may be entirely disregarded.

Answering Dr. Dennis' question, unfortunately the periosteum of the superior maxillary bone has not the regenerating power of the inferior maxillary. In the roof of the mouth we have only periosteum and mucous membrane—practically one membrane, but if you separate them and preserve the under layers of the periosteum you can obtain some bone formation on the under side of it.

Dr. Dunn. Could you bridge over the soft tissues by using these same methods?

Dr. Babcock. It is easy to strip up the periosteum, but here you have the mucous membrane and periosteum amalgamated and you can not split them apart but must use both. You can not use one without the other very well.

Now as to the sore tongue after these operations, it is necessary to cover the rough points of the splints, etc., with wax or similar materials.

Dr. Waugh. Have you had trouble from the fermentation of food?

Dr. Babcock. Very little. I have used wax and paraffin or other gum around the teeth to cover all the depressions and gaps.

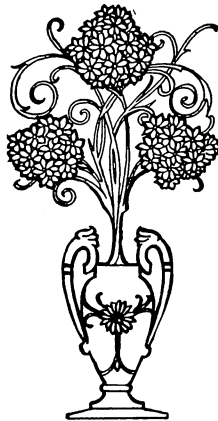
Dr. Waugh. You can open the mouth?

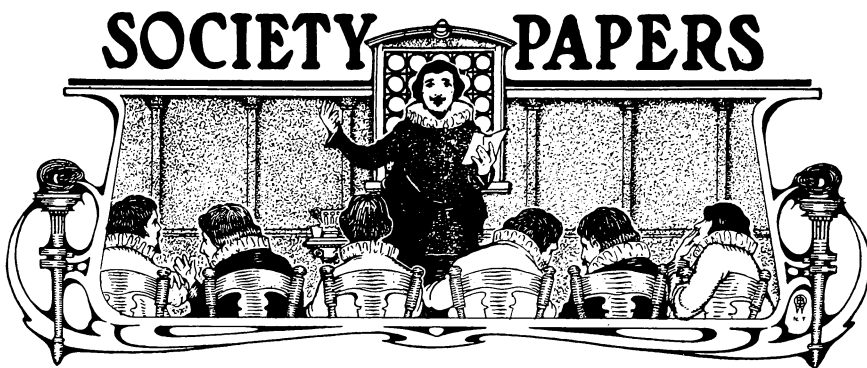
No, the teeth must remain in occlusion.

Dr. Babcock. As for the open operation of the wiring of fractures of the jaw is very rarely necessary, I think. In my experience I have felt when I went in from below, through the

ITEMS OF INTEREST

face, and have wired the fragments together, we have done more harm than good, and have simply opened up tissues partly devitalized, and traumatized them more than before, and there is usually more suppuration, irritation and necrosis of bone than would otherwise occur. The dentist or orthodontist is a better man to treat fractures than the operative surgeon. The surgeon who is safest, in other words, is the man who uses dental methods. The Hammond splint works very well. The open operations on the jaws I think usually do more harm than good.





Pyorrhea Alveolaris.

By M. L. RHEIN, M.D., D.D.S., New York, N. Y.

Read at the Joint Meeting of the County Medical Society and the Stomatological Club of Philadelphia, March 23, 1910.

The importance of the interrelationship between the individual parts of the body is well understood. The oral cavity is not only the gateway to, but is, in reality, the commencement of, the digestive tract through which the pabulum is supplied.

The main function of the teeth is to so thoroughly masticate the food that each minute particle is subjected to the chemical influence of the oral secretions. Much has been written about our ability to artificially supply lost teeth, but for true physiologic purpose nothing has yet taken their place. Consequently, the conservation of every portion of the oral cavity in a healthy condition is of greatest importance.

The teeth are not only the chief organs which deal with the food as it enters the mouth, but they are the most vulnerable. Their conservation in a healthy state is the most valuable factor in procuring normal food assimilation and thus preventing the inroads of numerous diseases.

The art of dentistry has long ago attained a position where it can successfully repair all forms of destruction of the crowns of the teeth, whether through caries or other causes. This is of little avail, however, when through loss of the alveoli and pathological disturbances of the periodontal tissues, the roots of the teeth become loosened and are finally ejected from the slight remnants of their sockets, accompanied sometimes by more or less suppuration, and then again without any such pus being visible.

This general condition has been known under many different names, but most commonly by the term pyorrhea alveolaris. While this term

ITEMS OF INTEREST

does not by any means conform to the different pathologic and biologic conditions usually present, it is perhaps inadvisable at this time to attempt to substitute a more appropriate nomenclature.

To properly appreciate a pyorrheal condition, it is necessary to be able to recognize the appearance of the gums and peridental tissues in the different stages of the disease anteceding the ultimate loss of the teeth by this means.

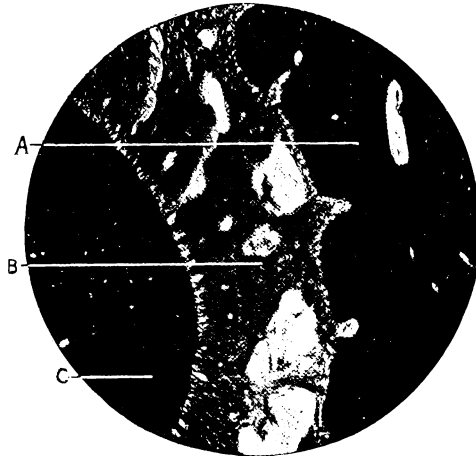


FIG. 1 (STEIN).

Fig. 1—(A) Bone with lacunæ and one Haversian. (B) Peridental membrane, blood vessels and Sharpey's fibers. (C) Cementum with lacunæ.

Therefore, it is of prime importance that we should be thoroughly familiar with the appearance of the physiologic mouth. It is as difficult to describe this as it is to delineate the varying aspects of the mouth in the numerous forms of pyorrhea which come under our observation. To be clinically understood, it must be clinically taught to the student, side by side with the different types of a pyorrheal nature.

The Tooth and Adjacent Parts.

The tooth is divided into two parts, the crown and root. The crown is entirely covered with enamel which acts as a protection against attacking agents. In place of enamel the roots are covered by cementum, a much softer substance, to which is closely attached the pericementum. This in turn is closely attached to the periosteum of the alveolus.

In examining a transverse section of an alveolar socket (Fig. 1) it will be noticed that the alveolus, periosteum, pericementum and cementum

of the tooth forms an interlacing mass of four distinct tissues which are separated from each other with difficulty and through which innumerable blood vessels penetrate and anastomose freely. In a normal state the roots are never exposed, but are covered on the outer surface by a layer of thick gum which ends in the gingival border where it presents a rounded conformation of moderate thickness and slightly overlaps the cementum and neck of the tooth which divides the root from the crown.

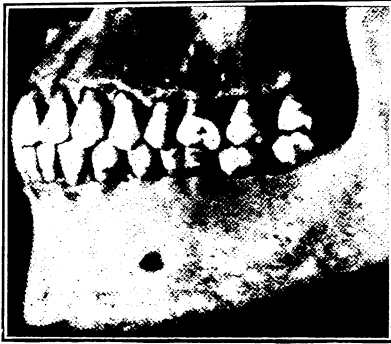


FIG. 2 (BUCCAL).



FIG. 3 (LINGUAL).

Figs. 2 and 3—Occlusion from both buccal and lingual aspects, showing some thirty mortars and pestles for the trituration of food.—(Turner, from a skull in the Wistar Institute of Anatomy.)

This gingival border closely follows the convolutions of the teeth while between them it sends out small pointed offshoots which partly fill in the V-shaped spaces between the teeth, which are known as interproximal spaces. The color of the normal gum is a delicate shade of pink. The teeth should support themselves by actual contact at a point near their occlusal surface and the lower upper teeth should come together so as to approximate what is known as a normal occlusion. In this manner the six upper anterior teeth slightly overlap the lower, while the molars and bicuspid come into actual grinding contact, interlocking into their respective cusps and facets, one tooth always antagonizing two of the opposing teeth, except the lower central incisors and the upper third molars (Figs. 2 and 3, Turner). It is impossible to give more than these brief outlines of a physiologic mouth in a paper of this kind.

It may not be amiss at this place to state how futile it is to expect the ordinary medical graduate to understand the various pathologic states to be found in the mouth without having had any education as to the normal conditions of the dental organs. As custodians of the public health, the true physicians will be able to scientifically diagnose not

ITEMS OF INTEREST

only the various digressions from physiologic conditions in the mouth, but also to appreciate the real significance of certain abnormalities of dentition, and the value of correcting the same.

This will never be accomplished until the requirements of the curriculum of the modern medical school embraces a chair on this subject and the candidate for the degree of M.D. passes an examination on this teaching.

At the present time we are confronted by the remarkable fact that a large proportion of able medical men too frequently ignore the anatomic physiologic, and pathologic conditions of the teeth, gums and alveolar sockets.

On the other hand, the practice of dentistry is overrun with men of ability in artizanship and purely dental technic, but with only a moderate knowledge of pathology and bacteriology as comprehended by medical men.

This gives us a field most attractive for budding empiricists of every form, and, as a result, dental medical magazines have been flooded with theories and views as to the etiology and pathology of diseases of the mouth, entirely at variance with the accepted scientific data of to-day. A sober thought must make us realize the fact that the pathology of one part of the body can not differ in principle from that of the body as a whole.

With this introduction let us consider the etiology, symptomatology, pathology, bacteriology and treatment of the malady.

**Etiology of
Pyorrhea Alveolaris.** There is no disputing the fact that the disease has been noted at all ages. While most commonly seen very late in life the writer has described in the *Dental Cosmos*, of June, 1895, page 507, a very marked case of pyorrhea alveolaris in a child of eighteen months of age, due to infantile scorbutis. This was the son of a well-known physician in New York, and the young man to-day has a very fine set of teeth with good occlusion. In young children with affections of the kidneys it is a most constant symptom. The disease has been described by dental writers of prominence for hundreds of years. While pyorrhea alveolaris literally means "a discharge of pus from the alveolus," the simplest definition of the pathogenic conditions commonly accepted under this term would be that it represents a diseased condition of the peridental region due to impaired nutrition. When we stop to consider the fact that the teeth are end organs, belonging in the same class with the nails and hair, there ought to be little difficulty in understanding the etiology of this disease. Nevertheless, a great many dentists have for years contended, and still contend, that the disease is a local one, basing

their belief entirely on the short-sighted view of a specialist who sees no other field. If the disease is merely symptomatic of impaired nutrition, they reason that local treatment alone would not cure it; and they also cite their frequent inability to find any derangement of the general system. Again, they call to our attention the fact that in similar cases, where the mouth is kept in a hygienic condition and the capillary vessels are stimulated by the daily massage of vigorous brushing, pyorrheal conditions have not developed, whereas in the uncared-for filthy mouth, the disease develops with the greatest ease.

In this argument they lose sight of the following important facts: first, that impairment of the vital organs usually progresses very slowly; and, second, that frequently it is impossible with the present-day methods to make a correct diagnosis until the disease has advanced to a certain state. Third, they place too little importance on the fact that we are considering end organs, dependent for nutrition on the ultimate capillaries. If by exercise, massage, etc., they are kept in good condition early stages of malnutrition will not show any response in this region. If the parts are neglected the opposite condition prevails. Under such neglect we have found that the walls of these ultimate capillaries themselves become diseased, the circulation becomes sluggish and it is not surprising that the first intimation of any nutritional impairment should be manifest in these end organs whose resistance to disease has been so seriously interfered with. Again, we contradict the claim that the disease is a local one and will attack dirty mouths of really healthy people. The cases cited are those in which some general form of malnutrition has started, but has not yet been diagnosed. The examination of countless mouths of people, which, although they be neglected, filthy and covered by accretions, are found to have the gums normal and free from inflammation, proves the correctness of this statement. A careful tabulation of the writers on this subject will disclose that those who believe at the present day that the disease is distinctly local, are men who either have no knowledge of modern pathology, or, having a smattering of the same, have had the hardihood to enunciate theories which are at variance with doctrines no longer disputed. If they are correct, our views on general pathology must be radically changed.

Scientific medicine of to-day recognizes one fact most clearly; that clinical data are impressive only when corroborative of scientific demonstrations, but standing alone are meaningless as to cause and effect.

A careful investigation of the views held by authoritative writers for the past twenty-five years decisively shows that this view, that some form of malnutrition is the real cause of pyorrhea, is held by the large majority of such writers.

ITEMS OF INTEREST

Experiments on Guinea Pigs.

The results of my investigations made at the Pediatric Laboratory in New York some eleven years ago are given here for the first time as corroborative evidence that in healthy bodies it is impossible to produce this disease. Four guinea pigs, proven later at the autopsy to be absolutely free from any taint of disease or abnormality, were chosen. Their food was carefully reduced day by day until they died at the end of ten weeks. Control pigs were kept in a cage alongside of these and fed with the usual quantities of food. About the beginning of the tenth week, when the pigs were weakened from lack of food, all eight of them were inoculated in the pericemental regions with injections of liquid cultures developed in bouillon, from pus taken from the pockets of pyorrheal patients. On the third day all evidence of the trauma produced by the injections had disappeared. At no time had there been the slightest evidence of even a resulting gingivitis. As stated before, the autopsies showed all four pigs to have absolutely normal organs, although they were practically skeletons. Of the control pigs, while three of them showed the same immunity to infection, the fourth one showed evidence of inflammation, and at the end of the fifth day there was a distinctive serous exudate coming from the neck of the front tooth around which the injections had been made. I have always regretted the fact that this pig was not killed and an autopsy held.

Before this time I had examined the mouths of many hundreds of guinea pigs inoculated by the Board of Health with tuberculosis. Every one of these showed the most marked evidence of pyorrheal conditions. In the same manner a visit to any sanatorium for tuberculosis cases will show on examination of the mouths, pyorrhea alveolaris in a degree of severity exactly conforming to the inroads which the disease has made. A like examination of the medical wards of any hospital containing cases of diseases of the heart, kidneys, liver, lungs, etc., will, if no attention has been paid to prophylaxis of the mouth, show conditions of pyorrhea. Even when the most strenuous efforts in this direction of mouth care are taken, if the form of the malnutrition has passed to a certain stage, no care of the mouth is sufficient to prevent the marked development of pyorrhea alveolaris.

Limitations of Prophylactic Treatment.

The limitations of the value of prophylactic care of the mouth can be best shown from the following note of a case in practice: Mrs. X, married; age, about thirty-five; weight, about two hundred pounds; suffering from fatty degeneration about the heart; beautiful set of teeth in normal occlusion, and free from caries or calculary deposit of any kind. Notwithstanding the most painstaking

care by the patient in brushing the gums and teeth four times daily, there were pyorrheal pockets about every tooth varying in depth from 1-64 to 1-4 of an inch, from which there was a constant discharge. After six months of local treatment, which was varied in every way at the earnest request of the patient, it was practically admitted that while benefited, no cure had been effected. She then left for Europe where she took a cure at Marienbad and all local treatment was dropped until I saw her on her return three months later. She had lost very much weight as a result of the treatment and the most careful examination failed to show a trace of a pyorrheal pocket or of any discharge. A year later she had again gained greatly in weight and all of the pyorrheal conditions had returned. The removal of the patient from the city caused me to lose sight of the case for eight years, when she called on me and stated that after another "cure," her mouth had again improved and she had had no further trouble. I have not seen her since.

**Effects of
Local Irritation.**

A great deal has been written about different forms of malnutrition being simply predisposing causes, but that there must be present an exciting cause of some localized irritating nature. The clinical case above quoted disproves the correctness of this statement, yet it is a fact that local irritation does play an important part in being the exciting cause in many cases that come under the care of the dentist for treatment. Especially where the malnutrition is in its incipency, such local irritations are essential to produce the disease, and the prognosis in such cases is always very favorable as compared to those cases where there is no exciting cause.

Accretions of salivary and serumal deposits under the gingival border are the most common exciting causes. The next most frequent exciting cause is various forms of malocclusion. This variation from normal occlusion is not only caused by deviations from the normal anatomical relationship of the teeth, but very frequently metallic fillings in the occluding surfaces of some of the teeth, cause an abnormal stress on these teeth owing to their wearing down more slowly than teeth unprotected in this way. Various diseases which are known to attack the pulps of teeth play an important rôle as exciting causes. Trauma of all kinds, and dental work of certain kinds, round out a list of causes that time does not permit us to describe in detail. The important point to bear in mind is the fact that while in many instances of incipient impaired nutrition no pathologic condition of the dental tissues would ensue without some exciting cause, yet without nutritional impairment this exciting cause would be incapable of producing any form of pyorrhea. Consequently, the vital cause must always be what is known as the predisposing cause, and this

ITEMS OF INTEREST

must depend on the character of the malnutrition. Removal of all exciting causes will always remain an essential treatment in the successful handling of this disease, but a more or less favorable prognosis can only be made as the nature of the malnutrition is understood and the possibility of its cure or control is properly appreciated. A correct diagnosis, by exclusion of every possible functional disturbance of toxemia, must be made, if intelligent treatment is to be prosecuted.

While all forms of pyorrhea must commence with some form of gingivitis, yet the appearance of the tissues in this and all succeeding stages varies in clinical appearance as markedly as do the generic types of malnutrition which interfere with a proper equilibrium of the circulation. The blue line in the gums as a result of mercurial toxemia, and the mucous patches due to syphilis are old landmarks in medical diagnosis. In like manner the physician awaits the eruptive stage in order to make a correct diagnosis between smallpox and measles, or any of the exanthems. Similarly, impaired nutrition during the period of gestation will frequently be marked with a characteristic gingivitis which has often emboldened me to enquire of my patient as to how long she had been pregnant. It may, therefore, be asserted with assurance that the variations in clinical appearance of the gums and pericemental tissues point with unerring fidelity to the cause of the dyscrasia. When these are once read with the same assurance that we now read the blue line, a great advance in the diagnosis of this disease will have been reached. When it is once duly appreciated that pyorrheal symptoms are a possibility at the very onset of any interference with the normal action of any vital function and that a proper reading of their clinical appearance will disclose at once the nature of the trouble, the study of the dental organs will be properly appreciated, and not until then.

The early diagnosis in this manner, of many constitutional diseases, by the writer, before the attending physician could place his hand on the seat of the trouble, gives me every assurance in making this announcement.

Classification of Pyorrhea Alveolaris.

In an article on "The Oral Expressions of Malnutrition," published in *The Dental Cosmos* for June, 1896, I give clinical notes of ten different cases, each showing a different constitutional derangement as the real etiologic factor in the pyorrheal condition.

In accordance with such results, in 1894.* I presented a method of classifying different forms of pyorrhea, which later was adopted by the

*Proceedings American Dental Association at Old Point Comfort, Va., Aug. 8, 1894.

late Prof. W. D. Miller, of the University of Berlin, in his text-book on operative dentistry. This classification is made by prefixing, or adding to the word pyorrhea, an adjective stating the name of the disease which is causing the pathologic symptoms in the oral cavity as "Diabetic Pyor-

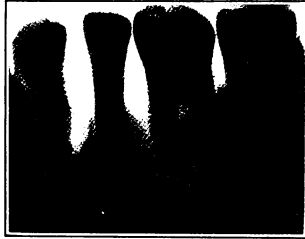


FIG. 4.



FIG. 5.



FIG. 6.

rhea," "Tubercular Pyorrhea," etc. Only under such a classification can a rational understanding be given in describing clinical cases.

Diagnosis. The lack of appreciation by dentists, of the necessity of making an exact diagnosis, has in the last few years led to an apparent alarming increase

in the cases of pyorrhea. The spread of knowledge as to such a malady has led many charlatans to call any slight gingivitis pyorrhea, and then to claim the credit of a wonderful cure. Mistaking other diseases for pyorrhea is becoming so common that over fifty per cent. of so-called bad cases of pyorrhea that are sent for consultation prove to be local diseases of some other kind. A very prominent surgeon in New York some time ago was sent for by a physician to see a woman who had fallen down stairs. He found the mouth full of pus, said it was a case of pyorrhea, and advised that I be called to attend the patient. Upon examination I

ITEMS OF INTEREST

found a comminuted fracture of the entire upper alveolus of such extent that I readily removed between sixty and seventy sequestral fragments. While such an error is almost inexcusable, it frequently becomes very difficult to differentiate between pyorrhea and simple alveolar abscesses. The radiograph has made the differential diagnosis of these cases comparatively simple, and yet Fig. 4 shows a case of pyorrhea with a large pericemental abscess that simulates very closely an alveolar abscess, except that the pulp was found to be living. Figs. 5 and 6, however, show typical cases of chronic alveolar abscesses which for years have been erroneously treated as pyorrhea.

Dentists too frequently take it for granted that because the pulp has never been exposed it must be living, when statistics show many dead pulps in teeth that have never even had the smallest kind of a cavity. The lack of care by dentists in making adequate differential diagnoses, before reaching conclusions, is unquestionably due to their inability to appreciate the close relationship of a part of the body to the whole.

To the logical mind it becomes at once apparent, if pyorrhea alveolaris results from so many varied causes, that the pathologic conditions, if carefully studied, will be found to vary with equal consistency. The great differences in results, reported at different times by the most capable of investigators, has led to much seeming antagonism in regard to the pathologic conditions. If each investigator would more frankly realize the relationship between cause and effect, this apparent difference would soon disappear. If each investigator would state the nature of the predisposing cause of the cases under study the results could then be properly compared with the work of others.

Where lack of proper use of the teeth and
Etiology. hygienic neglect permits the degenerate epithelial structures to remain in the interproximal spaces, they soon become a sufficient cause for inflammation. This is more or less marked according to how nearly the machinery of the body is working in perfect harmony. It is on account of this lack of perfect equilibrium, even where no vital defects are found, that after a certain age has been reached, man becomes very susceptible to this disorder, unless preventive measures are used. The irritation from this dead tissue produces a cul-de-sac which is the starting point of the well-known pyorrheal pocket. The contents of these sacs, under favorable conditions, become culture media for any of the pathogenic bacteria found in the mouth. The line of the inflammation generally progresses toward the pericementum both in the direction of the end of the root and outwardly into the periosteum, and finally into the alveolar structure, the thin and spongy wall of which makes it an easy prey to degenerative action. The

blood vessels on microscopical examination are all found to be in an abnormal condition. Artheromatous conditions are very common and account for the lessened nutrition in many types, but the microscopic study of this field has only been begun, and there remains many conditions for the study of the patient investigator. In the large percentage of cases of malnutrition there is either an inability to eliminate all effete material, or in some instances we find an overproduction of waste matter, and in many, a combination of these conditions. Passing through the circulation it is only natural that when these disturbing products reach ultimate nutritional places, such as the roots of the teeth, and especially where the capillaries themselves are diseased, they are very apt to proceed no further. This accounts for the different forms of deposits found so firmly attached to the sides of the roots. These deposits, as soon as formed, become important factors in the rapid advance of the disease. From the earliest practice the clinical observer has differentiated these deposits into varieties on account of the marked difference in their color, hardness, shape, and the tenacity with which they cling to the cementum of the roots. No portion of the root is immune from such deposits.

It is hoped this will give some conception of the pathology of the ordinary type of pyorrhea.

There are, however, other forms in which the cul-de-sac at the gingival margin plays no rôle in the development of the disease. In such cases, on account of the diseased condition of the vessels, deposits are formed on the pericementum without any lesion being present prior to the deposits. The tissue breaks under the effect of this irritation, and, suffering from a lack of nutrition, are soon infected by any of the pathogenic bacteria that may reach it. There are conditions where the deposits are entirely absent.

It is impossible within the limits of the time allowed to describe fully the various pathologic conditions that may be found in different classes of cases, but this general outline should suffice to give an idea of the one fact, that necrotic areas set in on account of impaired nutrition, and that these are susceptible to infection.

For many years scientific investigators have vainly sought to procure a pure culture of some organism that infects these tissues.

All scientific observers have practically given up all hope of making such a discovery. If the disease were a local one, there is little doubt but that some idiopathic organism would long since have been discovered.

The consensus of opinion is that any of the pathogenic germs found in the mouth are capable of being the infecting agent.

Treatment. The limitation of the programme prevents any detailed account of treatment. It may, however, be said with the strongest emphasis that the best treat-

ITEMS OF INTEREST

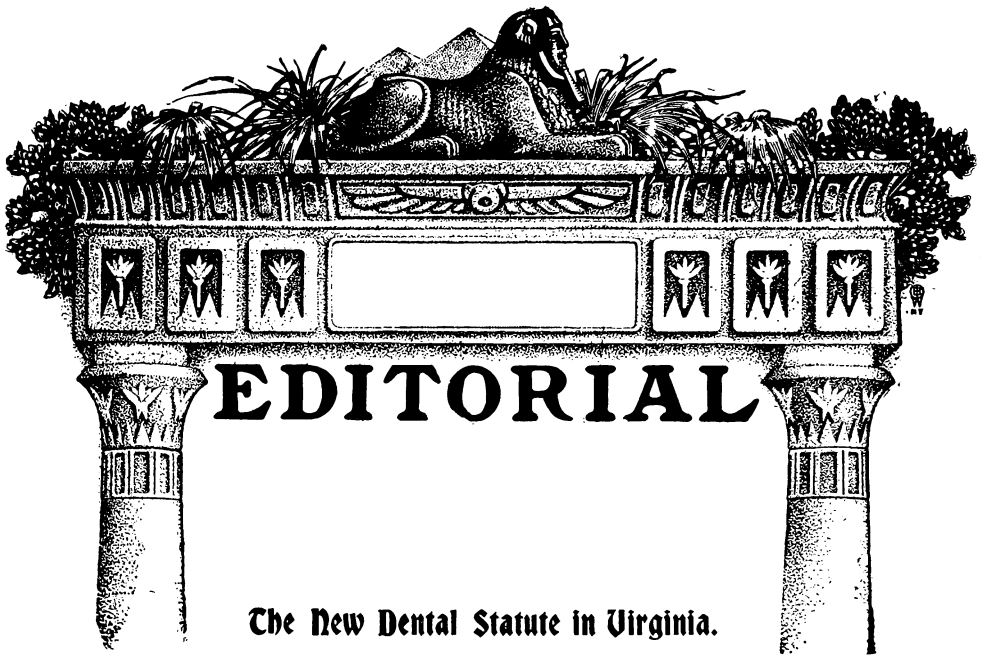
ment which we have discovered for this disease, is to prevent it. The large majority of cases which come under the dentists' care could be prevented if from early youth due attention had been given to the prophylactic care of the mouth. This consists in first seeing that the teeth have an occlusion as nearly normal as possible, and then that their function in real mastication of food be properly exercised. This, together with keeping the teeth free from foreign deposits, their surfaces thoroughly polished and daily vigorous massage of the gums, constitutes the essence of dental prophylaxis.

In the actual treatment of the disease the important point is to determine how nearly the patient's condition can be brought to a normal standard and consequently we must first diagnose what may be abnormal and every means must be utilized to improve the condition. Surgical treatment should never be commenced in diabetics until the constitutional disease is under check.

The local treatment to be effective will always be surgical as the important thing is to remove every trace of deposits and foreign matter from the roots as well as all pathogenic and necrotic tissues from all the peridental regions. The parts should then be stimulated to encourage the development of healthy tissue. Errors as frequently made in operating on too many teeth at one time. As a rule, two, or sometimes three, teeth should be made the limit of the operating field at one sitting. The patient must be made to appreciate the necessity of giving ample time daily to the proper brushing of his own teeth and gums. As nearly as possible missing teeth should be replaced and every means utilized to produce good occlusion. Pulps of teeth which are dead and those not in healthy condition should be removed and canals placed in an aseptic state. No necrotic root surface of any tooth should be left *in situ*. When teeth are hopelessly loose their pulps should be removed, and if that is ineffectual in tightening them they should be permanently united to other teeth whose pulps have been removed. The importance of very frequent office treatment by the dentist in order to maintain a due hygienic environment of the dental region must be insisted upon.

In certain cases where it becomes difficult to maintain the parts free from pus, where these measures have been faithfully carried out, a cure has been effected by the injection of vaccines made from a mixture of mixed mouth micro-organisms. This treatment is particularly effective in those cases which clinically resemble the ordinary neck boils and feruncles. While many cases can be permanently cured, no false hopes should be held out to patients where the prognosis recognizes the futility of much treatment. The treatment to be the best can never be exactly the same. The sound judgment of the dentist in charge will always be the real guide to success.

In conclusion, I wish to lay due emphasis on the fact that improvement of the local symptoms and restoration of the proper function of mastication will tend materially to improve the general health of the patient.



The New Dental Statute in Virginia.

In our May issue appeared a copy of the dental statute recently enacted in the State of Virginia. We published it in full, because it is the first law adopted in the United States which requires that dentists shall be medical graduates. The law seems to have been carefully drawn, so as not to say this in actual words, but apparently this will be true in effect, for the law states that the candidate for dental license must show that "he has passed the examination provided by law to practice medicine or surgery, and has received from the Virginia State Board of Medical Examiners the certificate thereof, as required by law to be given by them to such applicants."

The medical statute is not before us, but probably the medical degree is a prerequisite for examination by the medical board at present. Consequently, unless the medical statute is altered before January 1, 1914, so that they may be empowered to extend their examinations to graduates of dental colleges, it logically follows that after that date no man may

ITEMS OF INTEREST

expect to receive a dental license in Virginia unless he be a medical graduate.

In a very few schools, dental departments of universities, it is claimed that it is possible for a student to take the medical and the dental courses coincidentally, and to be graduated in both. In passing it may be said that if it require four years to study medicine alone, and three years by many is considered to be inadequate for the study of dentistry alone, it seems improbable that both may be properly acquired conjointly in the medical college terms. In regard to the other dental schools, the only hope for their graduates to practice in Virginia will be for them to take a medical course elsewhere.

The Reason for the New Law.

Why has Virginia adopted this law? There is no doubt that the gentlemen who have urged, and who have finally persuaded the Legislature to enact this statute are honestly actuated by the high purpose of improving the status of dentistry. They argue, and their argument can not be refuted, that every advance in dentistry more and more proves that the dentist of the future must be something more than a mouth mechanic or even a mouth artist; that he must be a mouth physician.

In proof of this, let us consider the most mechanical field of dentistry, the replacing of lost dental organs with artificial substitutes. As the art and science of prosthodontia has progressed, the bridge, fixed or removable, has become more and more the chosen method of treatment. Both types depend upon a proper treatment of the teeth which serve as piers, and an ignorance of the commonest laws of pathology has all too frequently resulted in great physical and financial loss to patient.

There is, consequently, no doubt that the dentist of the future should have greater medical knowledge than has been supposed in the past to be necessary. But have not the Virginia gentlemen confused this all too patent fact with the idea that a medical degree is required? The title MD. tacked on to the title D.D.S. will not guarantee the holder to be a better dentist. But an adequate knowledge of medical science, added to a thorough acquaintance with dental technique, must necessarily produce a better dental practitioner.

Have the gentlemen of Virginia adopted the wisest way of achieving that betterment of dentists which is their honorable aim? In practically



requiring a medical degree, by compelling dental license candidates to pass their medical board, have they not struck a death-dealing blow at our whole dental college system? Is that system so bad as to have deserved this? The statement is frequently made that dentistry is poorly taught in this country, but have the critics spent any great deal of time actually investigating our dental colleges? The writer confesses that he himself is not competent to judge whether our colleges are doing their whole duty. Probably they are not. Most likely great improvements can be made, since nothing in the world appears to be beyond improvement. But from personal visits to and investigations of a great many schools throughout this country, the writer does not hesitate to state as his opinion that our dental college system, especially considering the fact that it is less than a century old, is something that the dental profession may well be proud of. Consequently, it would seem that the Virginia gentlemen have not adopted the wisest way.

Let us use an extreme argument by way of pointing a moral. Let every State legislature in the United States at once pass the Virginia law just as it stands. That would please the gentlemen of Virginia, would it not? What would be the result? We would see the closing of every dental college not directly affiliated with a medical school, and a complete reorganization of these would be needed before the dental product would be as good as it is now. In such an emergency would the medical schools throughout the country be able to take over the dental students turned out of school? Are the medical schools in Virginia prepared to teach dentistry? If not, can it really be true, as the statute declares, that dentistry is a "specialty of medicine?"

Is there any other "specialty of medicine" of which the medical graduate is so woefully ignorant as he is of dentistry? A really prominent—and the word is used advisedly—a really prominent rhinologist in New York City recently removed adenoids and tonsils from a child suffering from a marked case of malocclusion, and then thus advised the parents: "You need not have anything done to the teeth now. Nature will take care of that, and they will straighten out as the child grows. Even these new specialists, the orthodontists, admit that the whole cause of crooked teeth is adenoids and enlarged tonsils, and I have cured this child of that."

ITEMS OF INTEREST

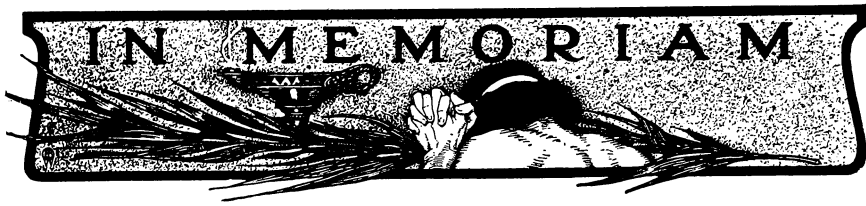
Inconsistency of the Virginia Statute.

On this subject of dentistry being a specialty of medicine, the Virginia law is peculiarly inconsistent. At the very outset it is stated that dentistry is recognized as a specialty in medicine. Nevertheless, in addition to passing the medical board, the candidate for a dental license is required to pass a second examination by a board of dental examiners. Is there any other "specialty of medicine," to practice which the medical graduate is asked to pass a second examination?

In prohibiting all who do not comply with this new statute from practicing dentistry, it is stated that nothing in the act shall prohibit a regular practicing physician from extracting teeth (permission to do which, by the way, is granted to *any one*, if the patient happens to be suffering with toothache). Is there any other specialty of medicine in which the medical graduate is so restricted?

Thus the statute first recognizes dentistry to be a specialty in medicine, and then promptly recognizes that the medical graduate is totally incompetent to practice this "specialty." And the second recognition is much nearer to the truth than is the first.

Admitting, as we have and must, that there is great need for very thorough medical knowledge by the dentist of the future, to the end that dentistry and dentists may be bettered and better, would it not be wiser for the States to enact statutes compelling their dental examining boards, year by year, to increase the medical requirements for the dental license? Would it not suffice, perhaps, to add competent medical men to the present dental boards, rather than to ask dentists to pass medical boards, to do which they must attend medical schools? Finally, would it not have been better for the gentlemen of Virginia to attempt to improve our dental college system and to enhance the value of the dental degree, rather than to have enacted a statute which debases both?



Dr. J. Y. Crawford.

After a brief illness, Dr. J. Y. Crawford died at his residence in this city, in the 63d year of his age.

I clip the following from "*The Banner*," of Nashville, which appeared on the day of his death, April 5, 1910:

Dr. J. Y. Crawford, one of Nashville's best citizens and a dentist of national fame, died shortly after noon to-day at his home, corner Belmont and Acklen avenues, as a result of an attack of angina pectoris, with which he had been a sufferer for several months. Though physically weak and a constant sufferer, Dr. Crawford continued to attend to his professional duties until last Sunday. From that day his condition gradually grew more critical, despite the fact that he received the best medical attention, and this morning at an early hour he lost consciousness, and all hope of his ultimate recovery was abandoned.

Dr. Crawford was a native of Tennessee; his father, J. Y. Crawford, being one of the prominent Methodist preachers of this state in antebellum days. He was born June 2, 1847. The larger portion of his childhood was spent in West Tennessee, but he had been a resident of Nashville for the past thirty years.

Though only fourteen years of age at the outbreak of the war he entered the Confederate service, serving in the Commissary Department in Florida for the four years of that bloody period. At the close of the war he went to Bowling Green, Ky., where he studied dentistry under one of the leading dentists of that city, later taking his degree at the University of Tennessee. Following his graduation he located in McKenzie, where he practiced for several years. He then removed to Nashville and has since that time lived here. He soon took rank as a leader in the profession and for years has stood without a superior as a dental surgeon in the South.

Dr. Crawford was the last surviving member of the committee of five prominent dentists who during the World's Fair at Chicago organized the International Dental Congress.

Dr. Crawford was always a prominent figure in his profession, tak-

ITEMS OF INTEREST

ing an active interest in its associations and organizations, and was several times a delegate to the American Dental Association.

Dr. Crawford was a good citizen. He was possessed of a genial disposition and had won a large circle of friends, not only in the profession, which he had so long adorned, but among the people generally, who admired him for his charming personality and the deep interest he ever manifested in the city's welfare. He was a member of the Methodist Church, holding his membership in McKendree at the time of his death, but for a number of years, while a resident in West End, he was one of the officials of West End Methodist Church. He was ever ready and willing to contribute liberally of his means to the promotion of the church's work.

In 1885 Dr. Crawford married Miss Louise Haggard, daughter of the late Dr. W. D. Haggard, and a sister of Dr. Will D. Haggard, Jr. He is survived by his wife and three children, J. Y. Crawford, Jr., Jane Douglas and Mary Louise.

The writer's acquaintance and friendship for Dr. Crawford commenced in the seventies, when he was practicing in West Tennessee, and located in the town of McKenzie.

During those years he joined our State Dental Association, and was regular in his attendance upon its annual meetings.

He was always an enthusiastic and devoted worker in his State Society, faithful in his contributions, and animated in its discussions. While on these visits to Nashville, where our annual meetings were generally held, he mingled freely with his professional friends of the Capital City, and being of a very genial and social disposition, made many warm friendships that lasted until his death. These friendships were not confined to members of his own profession, but his sunny smile and pleasing conversation made him agreeable to all.

It was in these days that he became acquainted with, and developed a warm friendship for, the late Dr. Robert Russell, who was at that time dean of the somewhat infantile dental department of the University of Tennessee. Having studied his profession in the private office of a dentist in Bowling Green, Ky., Dr. Crawford was not at this time a graduate of a dental college, but his acquaintance with Dr. Russell, and the assistance he was able to render to that institution resulted in his obtaining the degree of D.D.S. from the University of Tennessee Dental Department. Shortly after this, he became a member of its teaching faculty, and removed to Nashville to practice.



Dr. Crawford's fine social qualities quickly obtained for him a lucrative practice, and his affection for his professional brethren was such that he seemed ever to regard them in the light of co-laborers, rather than competitors. One of his strongest points was his fondness for the company of medical men, and some of his warmest attachments were for his physician-friends. He sought their society eagerly, absorbing what of knowledge they could impart to him, and he, in turn, was ever ready to give them of his store.

Shortly after locating in Nashville, Dr. Crawford joined the American Dental Association, and the Southern Dental Association, and in these Societies, as in his own State Society, he was ever faithful in attendance, and in the discharge of his duties.

He was so popular in dental circles throughout the South that in 1888 he was elected President of the Southern Dental Association. This was in the best days of the old "*Southern*," and occurred at a joint meeting with the "*American*" at Louisville, Ky.

Many who read this will remember the speech made by the late Dr. J. H. McKellops, of St. Louis, when he nominated Dr. Crawford for President. He made an excellent presiding officer, and his meeting was a successful one.

In 1894 Dr. Crawford was elected President of the American Dental Association at a meeting held at Old Point Comfort, Va.

Thus, it may be seen that his popularity had been growing; that it was not confined to the South, but that it followed him wherever he went.

Being a fluent and pleasing speaker in a style a little florid, Dr. Crawford was much called on to preside at meetings, to make addresses, and to preside as toastmaster. On these occasions he always acquitted himself with credit to himself and with satisfaction to others.

On the occasion when Dr. Crawford was to preside over the American Dental Association, August, 1895, at its annual meeting, held at Asbury Park, N. J., Dr. Crawford was sick. He was overworked and quite unequal to the task before him, but he bravely opened the meeting and read his address, then gave up, and took to his bed, appearing no more during the meeting.

To show how firm a place he held in their affections, and how determined they were that he should enjoy the full honors of the Presidency, his friends re-elected him President at this meeting. This was the first and last instance in the history of this Society of the re-election of any man to its Presidency.

Nor did Dr. Crawford's interest in his work in dental societies flag after acquiring such honors, but he worked assiduously for the union of

ITEMS OF INTEREST

"Southern" and "American" to form the National Dental Association, in which he has been a tireless worker as a member of its Executive Council, until last year, when he asked to be relieved of this duty.

Dr. Crawford enjoyed an international fame, and his work in the organization and maintenance of the International Dental Congress made for him an extensive acquaintance throughout the world.

He will be greatly missed at our annual gatherings, and many in distant lands will be made conscious of our loss when the Journals are read from America with his well-remembered and genial face for a frontispiece, and they will shed tears to think that we shall meet him no more in this life.

L. G. NOEL.

From across the great wide welkin
Whence he journeyed, peals no bell
Ringing vespers notes and matins,
Reassuring "All is well."

We can neither see nor surmise
What God signed for him to do,
Nor what task those hands new-folded
Straightway opened wide unto.

But we saw the slow preparing
Which his life was, and we knew
How in all the long, long tasking
He was loyal; he was true.

Zeal of tongue and cunning fingers—
These were his, whate'er he wrought;
And unto each new day's labor
Heart and hand he gladly brought.

What he gave earth's task so freely,
He will give God's task unto;
"All is well" proved in the old life,
Pledges "All well" for the new.

—GARNET NOEL WILEY.



Correction.

VIENNA, April 18, 1910.

DR. J. P. BUCKLEY,
Chicago, Ill.

Sir: I take the liberty to call your attention to the following facts: The ITEMS OF INTEREST for April, 1910, published a contribution from you entitled, "Reply to the Digest of Mayrhofer's Book." This article contains a statement which I can not let pass uncontradicted, viz.: "There is a firm in Europe selling to the profession Dr. Arthur Schreier's Trikresol-Formalin Paste and Solution for the treatment of pulp decomposition (Dr. J. P. Buckley's method). That is a mistake, as my name has nothing to do with that proceeding. Probably you meant to say Dr. Scheuer. But whatever your intention was, I must ask you most decidedly to give the readers of the ITEMS OF INTEREST a full explanation as soon as possible. I have good reasons for this request. Though you seem not to know it, I am the originator of a method to treat pulp decomposition, the sodium potassium process, which, in its time (1892), and since has been considered a valuable expedient based on scientific principles, and is still followed by many a good man in your country, like McQuillen, Rhein, Ottolengui, Callahan. So you will understand that it is not unmaterial to my reputation to be quoted in such a connection.

I am very sorry to give you that annoyance, but I see no better way to set things right. Believe me to be

Yours very truly,

DR. SCHREIER.

May 10, 1910.

DR. EMIL SCHREIER,
Vienna.

My Dear Doctor: After some delay, on account of the wrong address, your letter was received which called attention to the fact that the name "Schreier," instead of "Scheuer," appeared in my recent article in the ITEMS OF INTEREST. I regret this as much as you do, and am certain

ITEMS OF INTEREST

that the name Scheuer was on my original MS., for I copied it directly from an advertisement in the *Dental Cosmos*. I knew that the party in question was not the Schreier of potassium-sodium fame, and you do yourself an injustice when you presume to say that I seem not to know of your method of treatment. If you will refer to pages 303-4 of my recent work on "Modern Dental Materia Medica, Pharmacology and Therapeutics," you will find that I not only gave you credit for the metallic potassium and sodium treatment, but that I spoke favorably of the method and referred to the fact that Dr. Rhein and others favored its use.

I shall write Dr. Ottolengui and ask him to make the correction in the names.

With best wishes, I beg to remain,

Very truly yours,

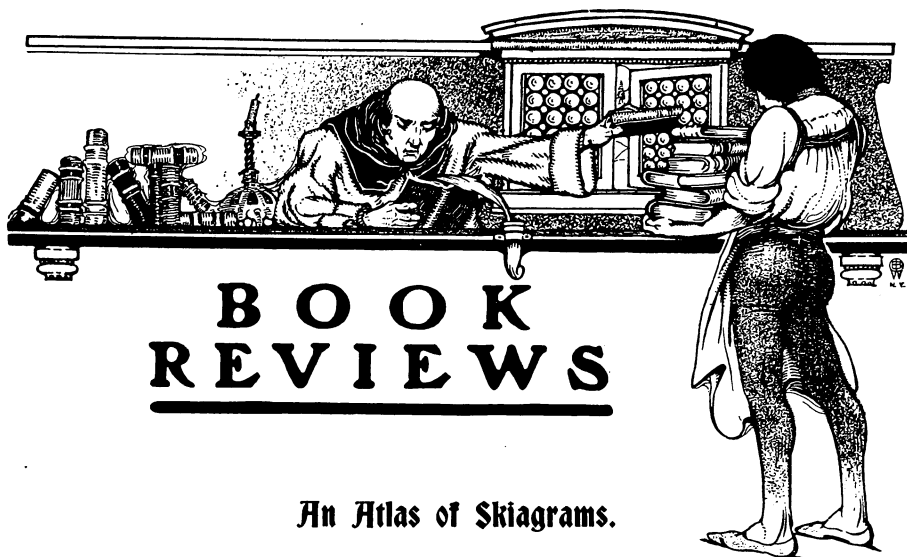
Chicago, Ill.

J. P. BUCKLEY.

Errata in Dr. Midgley's Article.

We regret that in publishing the paper by Dr. Albert L. Midgley, which appeared in our May number, several type errors occur in the legends under the illustrations. Fortunately the illustrations are all correctly referred to in the text itself, but the following corrections should be made in the legends, which should have read as follows: "Fig. 1. Described under Case III. Fig. 2. Described under Case IV. Figs. 3, 4, 5 and 6. Described under Case V. Fig. 7. Described under Case VI. Fig. 8. Described under Case VII.—EDITOR.





Illustrating the Development of the Teeth. With Explanatory Text. By JOHN-
SON SYMINGTON, M.D., F.R.S., and J. C. RANKIN, M.D. London: Longmans, Green
& Co., 1908.

In this volume is reproduced a series of skiagrams illustrating the development of the teeth, exhibited at the annual meeting of the British Dental Association by Queen's College, Belfast.

Nothing has appeared heretofore which so graphically and accurately illustrates tooth development, in its various stages, and the book is not alone useful and instructive to student and practitioner, but should be of great value in such instruction as it is consistent to give to patients and parents along these lines.

The illustrations, all of which are half-tone prints from blocks made from untouched negatives, are splendidly executed, and would make good material for lantern-slides used in connection with our public educational lectures.

The general public, and especially those who are entrusted with the guardianship of young children, need instruction on many points in connection with the first organ of digestion, but on none of more importance than the development of the teeth and the wisdom of the conservation of the temporary set until their permanent successors are ready to erupt.

It is sometimes difficult to present such matters in a manner easily comprehended by the lay mind, and such a series of illustrations as are presented in this volume are of great assistance in so doing.



ITEMS OF INTEREST

The authors are to be congratulated on their selection of specimens, the excellence of their reproduction, and the contribution of a valuable addition to dental literature.

E. N. K.

Elements of Orthodontia.

A Laboratory Note Book for Students and Beginners. By B. E. LISCHER, D.M.D. St. Louis: The C. V. Mosby Company, 1909.

This volume is, as its title indicates, a primer for the student in orthodontia, and it covers the field for which it is intended in a very commendable manner.

The author, with an evident true conception of the science of education, seems to appreciate the necessity of leading the untrained mind of the beginner along scientifically graded steps, making sure that each step is understood before the next one is attempted. This is as it should be in such literature, but usually is not.

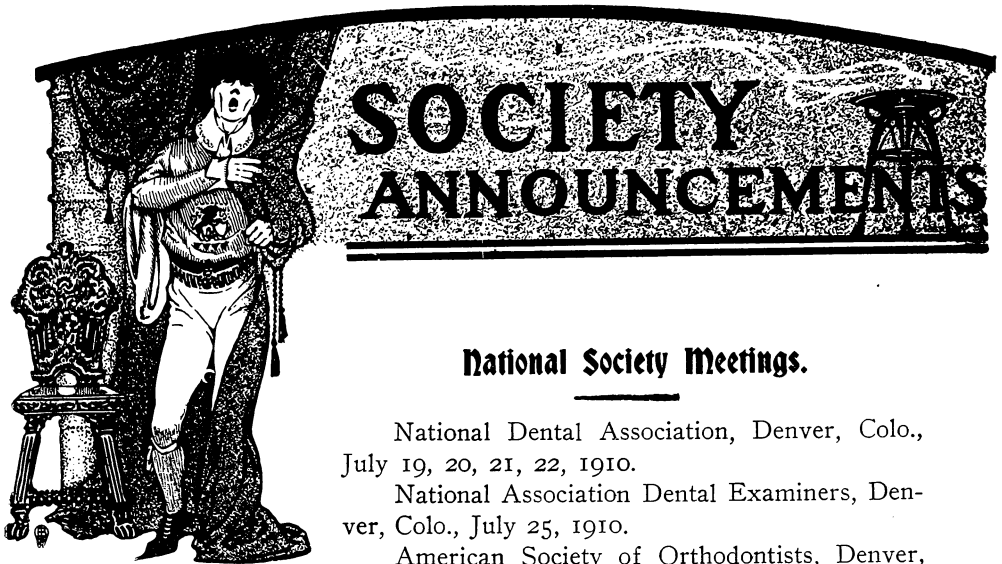
The authors of most of our modern text-books take the preliminary knowledge of the student too much for granted.

Nine-tenths of our dental students are trying to climb the professional ladder by starting on middle rounds, with the natural result that such knowledge as they gain is based upon an uncertain foundation.

Dr. Lischer's book should prove a valuable aid to both the student and instructor in orthodontia.

E. N. K.





National Society Meetings.

National Dental Association, Denver, Colo.,
July 19, 20, 21, 22, 1910.

National Association Dental Examiners, Den-
ver, Colo., July 25, 1910.

American Society of Orthodontists, Denver,
Colo., July 13, 14, 15, 1910.

State Society Meetings.

California State Dental Association, San Francisco, Cal., June 22,
23, 24, 25, 1910.

Maine Dental Society, Rangeley, Me., June 22, 23, 24, 1910.

Massachusetts Dental Society, Springfield, Mass., June 14, 15, 16,
1910.

New Jersey State Dental Society, Asbury Park, N. J., July 20, 21,
22, 23, 1910.

Oregon State Dental Association, Portland, Ore., June 30, July 1
and 2, 1910.

Pennsylvania State Dental Society, Harrisburg, June 28, 29, 30,
1910.

South Carolina State Dental Association, Glenn Springs, S. C., June
28 to July 1, 1910.

Virginia State Dental Association, Staunton, Va., Aug. 3, 4, 5, 1910.

Wisconsin State Dental Society, Ashland, Wis., July 12, 13, 14,
15, 1910.

West Virginia State Dental Society, Parkersburg, W. Va., Oct. 12,
13, 14, 1910.



National Dental Association.

Auditorium, Denver, Colo., July 19-22, 1910.

Preliminary Literary Programme.

Section I.

Geo. H. Wilson, Chairman, Schofield Bldg., Cleveland, Ohio; Stanley L. Rich, Vice-Chairman, Jackson Bldg., Nashville, Tenn.; B. Frank Gray, Secretary, 1003 Security Bldg., Los Angeles, Cal. Prosthetic Dentistry, Crown and Bridgework, Orthodontia, Metallurgy, Chemistry, and allied subjects.

Essays.

1. *The Laws Controlling the Behavior of Gold in Fusing and Casting.* By Weston A. Price, Cleveland, Ohio. Discussed by: 1. Clarence J. Grieves, Baltimore, Md.; 2. Charles Channing Allen, Kansas City, Mo.; 3. Thomas P. Hinman, Atlanta, Ga.; 4. C. R. Baker, Davenport, Iowa; 5. Chas L. Alexander, Charlotte, N. C.

2. *Anatomical and Esthetic Prosthesis.* By J. Leon Williams, London, England. Discussed by: 1. C. R. Turner, Philadelphia, Pa.; 2. A. W. Starbuck, Denver, Colo.; 3. B. J. Cigrand, Chicago, Ill.; 4. E. S. Gaylord, New Haven, Conn.; 5. N. S. Hoff, Ann Arbor, Mich.

3. *The Bleaching of Porcelain Fillings.* By Levitt E. Custer, Dayton, Ohio. Discussed by: 1. Joseph Head, Philadelphia, Pa.; 2. D. O. M. LeCron, St. Louis, Mo.; 3. Craig M. Work, Ottumwa, Iowa; 4. H. C. Ferris, Brooklyn, N. Y.; 5. J. Allen Smith, Colorado Springs, Colo.

4. *Deficient Development of the Deciduous Dental Arches and Its Treatment.* By J. Lowe Young, 571 Fifth Ave., New York City. Discussed by: 1. Lloyd S. Lourie, 92 State St., Chicago, Ill.; 2. Herbert A. Pullen, 722 Main St., Buffalo, N. Y.; 3. S. H. Guilford, Philadelphia, Pa.; 4. F. S. McKay, Colorado Springs, Colo.; 5. Victor H. Jackson, New York City.

Section II.

L. L. Barber, Chairman, 718 Spitzer Bldg., Toledo, Ohio; Frank I. Shaw, Vice-Chairman, 624 Burke Bldg., Seattle, Wash.; F. L. Platt, Secretary, Elkin-Gunst Bldg., San Francisco, Cal. Operative Dentistry, Nomenclature, Literature, Dental Education, and allied subjects.

SOCIETY ANNOUNCEMENTS

1. *The Gold Inlay from the Standpoint of a Gold-Filling Enthusiast.* By J. V. Conzett, Dubuque, Iowa. Discussed by: 1. W. H. Taggart, Chicago, Ill.; 2. Don M. Gallie, Chicago, Ill.; 3. J. Q. Byram, Indianapolis, Ind.; 4. Chas. W. Rodgers, Dorchester, Mass.; 5. J. F. Wallace, Canton, Mo.

2. *Professional Opportunity.* By Charles Channing Allen, Kansas City, Mo. Discussed by: 1. Wm. Carr, New York City; 2. Thos. J. Barrett, Worcester, Mass.; 3. V. E. Turner, Raleigh, N. C.; 4. Chas. E. Jones, Chicago, Ill.; 5. J. J. Wright, Milwaukee, Wis.

3. *The Metric System of Weights and Measures.* By David Stern, Cincinnati, Ohio. Discussed by: 1. Wilbur F. Litch, Philadelphia, Pa.; 2. John P. Buckley, Chicago, Ill.; 3. Emory A. Bryant, Washington, D. C.; 4. Edwin N. Kent, Brookline, Mass.

4. *Some Difficulties and How to Correct Them.* By James G. Sharp, San Francisco, Cal. Discussed by: 1. B. Holly Smith, Baltimore, Md.; 2. A. J. Cottrell, Knoxville, Tenn.; 3. J. Edward Chace, Ocala, Fla.; 4. R. Boyd Bogle, Nashville, Tenn.; 5. George R. Warner, Grand Junction, Colo.

5. *Preventive Dentistry for Children.* By M. Evangeline Jordon, Los Angeles, Cal. Discussed by: 1. W. T. Jackman, Cleveland, Ohio; 2. Ray D. Robinson, Los Angeles, Cal.; 3. Arthur C. Watson, Denver, Colo.; 4. Garrett Newkirk, Pasadena, Cal.; 5. Celia Rich, Nashville, Tenn.

Section III.

Wm. Carr, Chairman, 35 West 46th St., New York City; L. F. Luckie, Vice-Chairman, Birmingham, Ala.; Richard Summa, Secretary, 410 Metropolitan Bldg., St. Louis, Mo. Oral Surgery, Anatomy, Physiology, Histology, Pathology, Etiology, Hygiene, Prophylaxis, Materia Medica, and allied subjects.

1. *The Importance of a Correct Diagnosis before the Therapeutics of Diseases of the Dental Pulp.* By John P. Buckley, Chicago, Ill. Discussed by: 1. Edward C. Kirk, Philadelphia, Pa.; 2. A. H. Peck, Chicago, Ill.; 3. F. G. Worthley, Kansas City, Mo.; 4. John R. Callahan, Cincinnati, Ohio; 5. Frank L. Platt, San Francisco, Cal.

2. *Stomatitis.* By G. V. I. Brown, Milwaukee, Wis. Discussed by: 1. J. D. Patterson, Kansas City, Mo.; 2. L. G. Noel, Nashville, Tenn.; 3. G. V. Black, Chicago, Ill.; 4. W. H. DeFord, Des Moines, Iowa; 5. Thomas Edward Carmody, Denver, Colo.

3. *A Study of the Temporo-Mandibular Articulation, Cusp and Approximal Contact Points.* By Martin Dewey, Kansas City, Mo. Discussed by: 1. A. H. Thompson, Topeka, Kan.; 2. Wm. Bebb, Los

ITEMS OF INTEREST

Angeles, Cal.; 3. W. E. Walker, New Orleans, La.; 4. F. C. Kemple, New York City; 5. L. P. Bethel, Columbus, Ohio; 6. H. A. Fynn, Denver, Colo.

4. *A Review of the Dental Hygiene Movement with Suggestions for Increasing Its Efficiency.* By Herbert L. Wheeler, New York City. Discussed by: 1. Paul G. White, Boston, Mass.; 2. Edward Everett Havestick, St. Louis, Mo.; 3. J. D. Towner, Memphis, Tenn.; 4. W. A. White, Phelps, N. Y. Wednesday, 8 P. M., July 20th, open session devoted to Oral Hygiene. Address: "*The Teeth and Health in Their Public Relations.*" By W. A. Evans, M.D., Commissioner of Health, Chicago, Ill.

Headquarters of the Association, Brown Palace Hotel. Rate: Rooms without bath, \$2.00 per day; with bath, \$2.50 and \$3.00 per day. See official programme for information regarding other hotels, etc.

All sessions of the Association, clinics and exhibits will be held in the Auditorium.

Tourist railway rates are the best we are able to secure. Special train leaves Chicago over the Northwestern at 6 P. M., Saturday, July 16th.

BURTON LEE THORPE, President.

St. Louis, Mo.

CHARLES S. BUTLER, Recording Secretary.

Buffalo, N. Y.

National Dental Association Clinic.

One of the special features of the Clinic to be held in Denver will be the surgical section. An operating-room will be fitted up in the auditorium with all modern appliances. Several dental surgeons have consented to give clinics that will be of unusual interest.

All clinics and all meetings will be held in the auditorium. The rooms and arrangements for all clinics are ideal, with plenty of room and light.

Dr. A. W. Starbuck, Denver, Colorado, 14th and Araphoe Sts., is chairman of the local committee. All clinicians will please write him and let him know what kind of a case will be needed, and find out what they need to take with them.

For all chair clinics, cabinets have been furnished, that the clinicians may have a place to put instruments.

We solicit clinics from any member of a State or district society, and if you have not already sent in your name and the subject of your clinic, do so at once to any member of the committee.

SOCIETY ANNOUNCEMENTS

CLINICS.—F. O. Hetrick, Chairman, Ottawa, Kan.; Star. Parsons, Washington, D. C., Vice-Chairman; L. A. Crumley, Secretary, Birmingham, Ala.; J. E. Chace, Ocala, Fla.; George E. Savage, Worcester, Mass.; J. J. Sarrazin, New Orleans, La.; H. H. Sullivan, Kansas City, Mo.; A. O. Ross, Columbus, Ohio; J. D. Towner, Memphis, Tenn.; J. B. Howell, Paducah, Ky.; L. B. McLaurin, Natchez, Miss.; J. H. Lorenz, Atlanta, Ga.; F. L. Hunt, Asheville, N. C.; J. G. Fife, Dallas, Tex.; W. G. Dalrymple, Ogden, Utah; R. D. Robinson, Los Angeles, Cal.; C. S. Irwin, Vancouver, Wash.; F. R. Henshaw, Indianapolis, Ind.; H. B. McFaddin, Philadelphia, Pa.; F. L. Wright, Wheeling, W. Va.; R. L. Simpson, Richmond, Va.; A. P. Burkhart, Buffalo, N. Y.; S. W. Bowles, Washington, D. C.; T. M. Hampton, Helena, Mont.; J. Bruce Perrin, Des Moines, Ia.

F. O. HETRICK, Chairman.

Ottawa, Kansas.

Delta Sigma Delta Fraternity.

The twenty-sixth annual meeting of the Supreme Chapter of Delta Sigma Delta Fraternity will convene at the Hotel Savoy, Denver, Colorado, Monday, July 18, at 10 A. M.

R. HAMILL D. SWING, Supreme Scribe.

Kansas State Board of Dental Examiners.

The next meeting of the board for the examination of candidates for license to practice dentistry in Kansas will be held in Topeka, Kansas, beginning June 21, 1910, at 9 o'clock A. M. Only graduates of reputable dental schools, or those having practiced five years in some other State or Territory, are eligible.

Of those from States having reciprocal agreement with Kansas, only practical examination is required. For further information and blanks, address

G. F. AMBROSE, President.

Eldorado, Kansas.

F. O. HETRICK, Secretary.

Ottawa, Kansas.



Wisconsin State Dental Society.

The Wisconsin State Dental Society will hold its annual meeting at Ashland, July 12, 13, 14, and 15, 1910. Dr. Harvey N. Jackson, President; Dr. M. L. Christensen, Secretary. All members residing in the State are expected at this meeting. All ethical practitioners in the State are urged to come and join. A cordial invitation is extended to the profession residing out of the State.

M. L. CHRISTENSEN.

Southwest Virginia Dental Society.

The next annual meeting of the Southwest Virginia Dental Society will be held at the Pulaski Inn., Pulaski, Va., June 7th and 8th. 1910.

CHAS. A. NEWLAND, Secretary and Treasurer.

Wytheville, Va.

Wisconsin State Board of Dental Examiners.

There will a meeting of the Wisconsin State Board of Dental Examiners, for the examination of applicants for registration, beginning Monday, June 20, 1910, at 9 A. M.

The examination will be held at the Marquette University, Milwaukee. Candidates should send in their application and fee of \$25.00 at least ten days before the meeting.

For further information, address

C. S. McINDEE, Secretary.

Rhineland, Wis.

Ohio State Dental Board.

The regular spring meeting of the Ohio State Dental Board will be held in Columbus, on June 21-23 inclusive. All persons desiring to secure licenses should address the Secretary and procure applications.

Applications must be returned to the Secretary, with the fee of twenty-five dollars (\$25.00), not later than June 11.

For further information, address

L. L. YONKER, Secretary.

Bowling Green, O.



The Dental Alumni Association of the Medico-Chirurgical College of Philadelphia.

The Dental Alumni Association of the Medico-Chirurgical College of Philadelphia will hold its annual alumni week Wednesday, June 1, to Saturday, June 4.

Wednesday, June 1, 11 A. M., meeting and election of officers of the Association in the Dental Infirmary; 12.30 P. M., Luncheon, Dental Infirmary; 2 P. M., clinics by the most prominent dental practitioners of Philadelphia; 8 P. M., Dental Alumni Banquet, Kugler's. Thursday, June 2, 8 P. M., General Alumni Banquet, Bellevue-Stratford. Friday, June 3, 11.30 A. M., Annual Commencement, Academy of Music.

South Dakota State Board of Dental Examiners.

The South Dakota State Board of Dental Examiners will hold its next regular meeting at Sioux Falls, S. Dak., July 6, 1910, beginning at 9 A. M., and continuing three days. All applications for examinations, together with a fee of twenty-five dollars (\$25.00), must be in the hands of the Secretary by June 26. Applicants who have not complied with the above will not be permitted to take the examination.

G. W. COLLINS, Secretary.

Vermillion, S. Dak.

Massachusetts Dental Society.

The forty-sixth annual meeting of the Massachusetts Dental Society will be held in Springfield, Mass., Tuesday, Wednesday and Thursday, June 14, 15 and 16. The members and guests of the society will enjoy the scientific and literary programme usual in dental society meetings. Special features will be papers by Drs. Cook and Buckley, of Chicago, and Dr. Price, of Cleveland, and others to be announced. A limited number of high-grade clinics on timely subjects will be given.

An interesting and instructive manufacturers' exhibit is scheduled, which will give the dentist an opportunity to keep abreast of the times in the equipment and supplies which are an essential in the expression of the dentist's personality. The complete programme, which will be mailed to each member, will give the complete details of the meeting.

Come to Springfield on some of these rare days in June and see the city of homes in all its beauty nestled down in the gorgeous valley of the New England's Rhine. There you will find a city of 85,000 and a purchasing center for over half a million.

ITEMS OF INTEREST

Forest Park, our pleasure park, has an area of over 700 acres. The Springfield rifle is made here, also the Smith & Wesson revolver.

A part of the meeting will be held on Mt. Tom, from the summit of which one can get a complete panoramic view of the surrounding country and see for twenty or thirty miles up and down the river.

A feature of the meeting will be the ladies' day. Wednesday afternoon we go to Mt. Tom by trolley and have our dinner at the summit and papers afterward.

Wide-awake dentists need scarcely be told that the most successful men are those who gather inspiration from the fellowship of kindred spirits of their professions. Those in charge of this meeting are planning to lay especial emphasis on the social features of the meeting. We extend to the dental profession a most cordial invitation to join with us in the pleasure and inspiration of this meeting in the beautiful city of Springfield. It is planned to hold the annual meetings in different parts of the State from year to year, thereby giving an opportunity to the dentist and his family to become acquainted with the different parts of the State and their dentists. It is believed that mutual acquaintance among people and dentists is the first step toward a mutual respect and appreciation.

The Post-Graduate School of Dentistry of Berlin.

A Post-Graduate School for holders of German or foreign State certificates in dentistry was opened in April at 22 Bülowstrasse, Berlin.

The instruction will be in charge of the following dentists: Dr. Konrad Cohn; Professor Dr. Dieck, Professor Guttmann, Court Dentist; Professor Hahl, H. J. Mamlok, Professor Dr. Wilh. Sachs, Dr. Erich Schmidt, Professor Dr. Schröder, Professor Dr. Williger, Willmer, Court Dentist.

The new school will have twelve rooms at its disposal.

Its purpose is to give all its visitors an opportunity of doing advanced scientific and practical work, of acquainting themselves with the latest improvements and inventions in surgical, technical and operative dentistry, including Röntgen diagnosis in a specially equipped Röntgen laboratory, and of familiarizing themselves with the application of these improvements by actual treatment of patients.

A dental infirmary is to be connected with the school, so that there will be no lack of material for instruction.

Further information as to the Post-Graduate School will be given by Dr. Erich Schmidt, 133 Potsdamer Strasse, Berlin.



Pennsylvania State Board of Dental Examiners.

The Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, June 8 to 11, 1910. For information or examination papers, address,

DR. NATHAN C. SCHAEFFER, Secretary, Dental Council.
Harrisburg, Penn.

South Carolina State Board of Dental Examiners.

The next annual meeting for the examination of applicants for license will be held at Glenn Springs, near Spartanburg, S. C., on June 24, 1910. For further information, apply to

B. RUTLEDGE, Secretary.

Florence, S. C.

Florida State Board of Dental Examiners.

The next annual meeting of the Florida State Board of Dental Examiners will be held in St. Augustine, June 20, 21 and 22, 1910.

Applicants for license to practice dentistry in this State will be required to exhibit diploma from reputable dental colleges, and take examination, both theoretical and practical. The theoretical will be: One gold-filling and one amalgam-filling in the mouth; one dowell crown to be made and mounted; one upper and lower set of teeth to be set up and articulated. Board will furnish models, also head-rests and blow-pipes. Applicants must furnish other necessary instruments, also recent photograph with application. Examination fee, \$20.00; certificate fee, \$5.00.

No interchange of license with any State. Any further information furnished on application.

W. G. MASON, Secretary of Board.

Vermont Board of Dental Examiners.

A meeting of the Vermont Board of Dental Examiners for the examination of candidates will be held at Montpelier, Vt., July 5, 6 and 7, commencing at 2 P. M., at State House.

For further information, rules and blanks, apply to

J. HOLMES JACKSON.

Burlington, Vt.



Memorial to Dr. Miller.

To the Dental Profession of America:

At the December, 1909, meeting of the Ohio State Dental Society, it was unanimously resolved that an American memorial be established to perpetuate the memory of the late Dr. Willoughby D. Miller, as an evidence of the profession's appreciation of his laborious and fruitful researches for the scientific advance of dentistry.

From the consensus of opinion of various State and local societies, it was decided that the memorial take the form of a monument, to be erected in a suitable public place in Columbus, Ohio, the capital of Miller's native State. The monument is to consist of a life-sized bronze of Dr. Miller, mounted upon a granite base of suitable proportions, with appropriate tablets, the cost of which will approximate \$8,000.

Though his scientific career was in a foreign land, the great pride he showed in his American citizenship, the love for his profession in America, and his final plans for educating students in his own country in the line of work he had so ably begun, should make this memorial movement national in its scope, and to this end the committee in charge has selected honorary committees in the several States to co-operate in bringing this matter to a successful issue.

This movement has received the endorsement of the National Dental Association. Ohio will raise \$1,200 for this fund, and it is the desire of the committee to have one tablet to state that contributions were received from representatives of the profession in every State of the Union.

Contributions are desired from individuals as well as societies, in fact, many small subscriptions are preferable to a few large ones.

The committee has selected Dr. Weston A. Price, 10406 Euclid Avenue, Cleveland, Ohio, to act as treasurer of this fund, and to him all subscriptions should be made payable.

That your State may be represented in this fund and appear in the published list of subscribers, we ask your earnest support. Your response to this appeal will be the measure not only of the success of our committee, but of the appreciation of American dentists for one who raised the standard of the profession.

Yours very respectfully,

EDWARD C. MILLS, Chairman,
16 South Third St., Columbus, O.

J. R. CALLAHAN,
25 Garfield Place, Cincinnati, O.
S. D. RUGGLES, Portsmouth, O.